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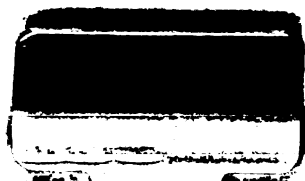
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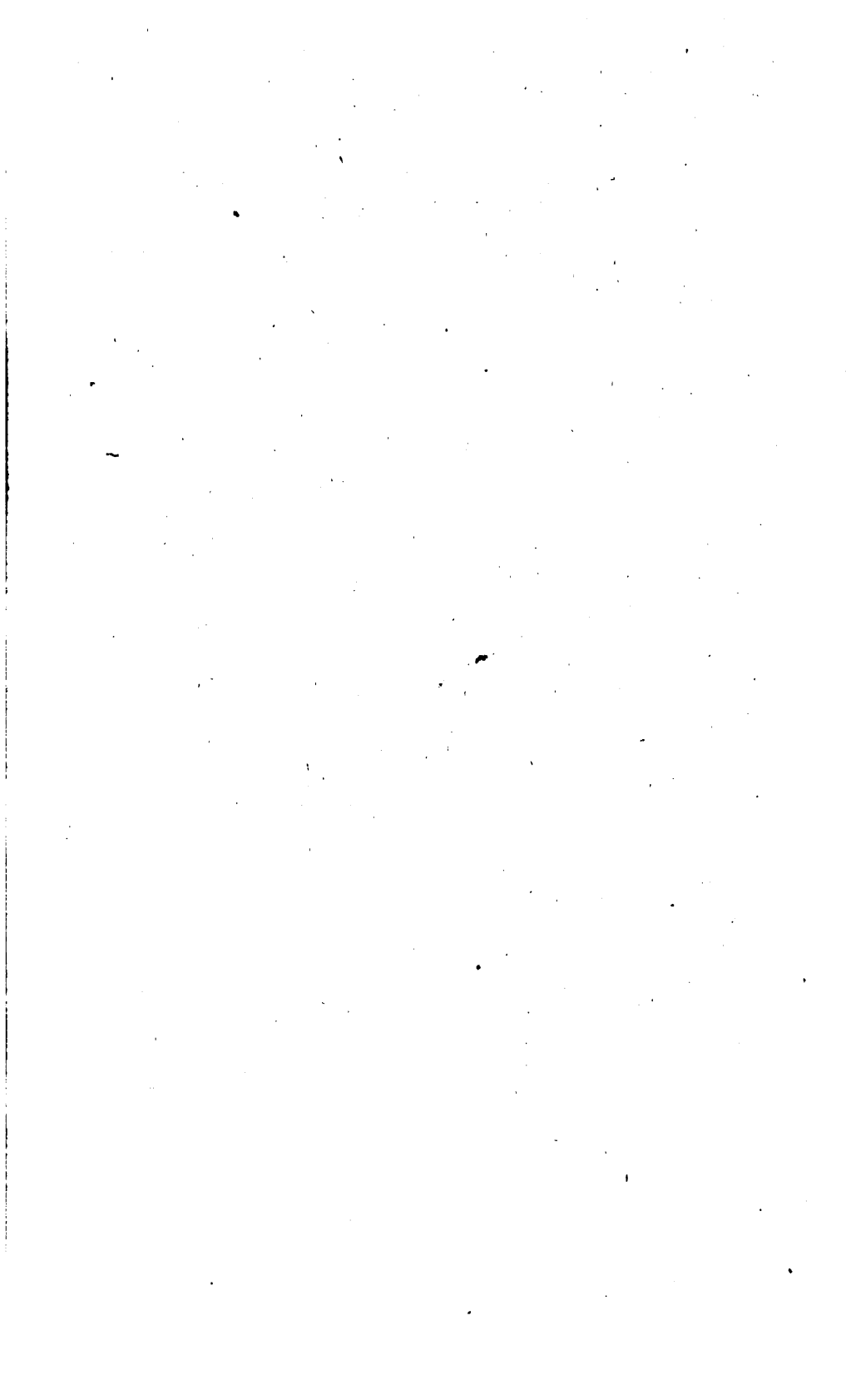
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THE SOCIETY**



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TRANSACTIONS
OF THE
MINNESOTA

STATE HORTICULTURAL SOCIETY.

PROCEEDINGS, ESSAYS AND REPORTS

AT THE
ANNUAL WINTER MEETING,

Held at Minneapolis, January 20-23, 1874,

AND
CORRESPONDENCE AND REPORTS UPON THE EFFECTS
OF THE WINTER OF 1872-3 ON FRUIT
TREES IN MINNESOTA.

Prepared by JOHN S. HARRIS, Secretary.

SAINT PAUL:
OFFICE OF ST. PAUL PRESS CO.
1874.

CONTENTS.

	PAGE.
List of officers—1874.....	5
Standing Committees.....	5
List of Members.....	6
Local and County Horticultural Societies.....	7
Preface.....	8
List of Nurserymen, Florists and Gardeners of Minnesota.....	10
Articles of Incorporation of the Society.....	11
By-Laws governing Society.....	13
Transactions of the Minnesota State Horticultural Society.....	15
Order of Business.....	17
Debates on fruit growing—	
Planting Apple trees.....	18
Best sorts for cultivation.....	19
Transplanting.....	19
Cultivation and protection.....	20
Pruning and time to prune.....	21
Diseases to which apple trees are liable and their treatment.....	22
Insects injurious to trees and fruits, etc.....	23
Circular of inquiry concerning the effect of severe winter of 1872-3 on fruit trees.....	27
Address of the Secretary.....	30
Report of the committee on, and discussion of the subject of varieties of apples.....	35
Report of committee on Siberian Apples.....	45
Debates on fruit growing resumed—	
Pears.....	48
Plums.....	48
Cherries.....	48
Grapes—addition to list of last year recommended.....	49
Currants.....	51
Gooseberries.....	51
Blackberries.....	51
Strawberries.....	51
Report from A. C. Hamilton—how trees should be set in Minnesota... ..	50
Resolution from Kansas State Horticultural Society relative to the organization of a "Western Pomological Society".....	52
Communication from Bates & Northrup pertaining to disasters of winter of 1873.....	52
Annual Address of the President of the Society.....	53
Report of committee on Kansas State Horticultural Society resolution.....	53
Election of Officers.....	53
Discussion of Shade trees.....	60
Ornamental trees.....	60
Evergreens.....	60
List of Evergreens adopted.....	61
Resolution inviting ladies to participate in proceedings.....	62
Soils best adapted to the various kinds of fruits, etc.....	62
Adoption of Code of By-Laws.....	63

Report of Committee on Varieties of Flowers for cultivation.....	64
Communication from Secretary Wisconsin Horticultural Society relative to exchange of Society's Transactions, etc.....	66
Report of Committee to Award Premiums	68
Cranberry Culture.....	69
Blueberries and Huckleberries.....	70

MISCELLANEOUS PAPERS, REPORTS, &C.

Cultivation of Roses in the open ground.....	71
Report of Committee to Make Awards in the Floral Department, State Fair, 1878.....	75
Report of the Horticulture Department—State Fair.....	81
Construction and management of greenhouses for amateurs.....	83
Report of last year's experience in fruit growing in Minnesota.....	86
An essay on flowers.....	87
Report of O. D. Storr, Winsted Lake, in reply to circular of Secretary	90
Report of E. P. Evans, Brownsville, for Houston county, Minn., and Vernon county, Wis.....	91
Report of D. F. Kelley, Northfield	92
Report of Barnett Taylor, Forestville.....	93
Reply to "Information Wanted".....	94
Report of J. H. Thomas, Young America, Minn.....	96
Report of G. A. Perley, Wasioja, Dodge county, Minn.....	96
Report of W. B. Smith, Owatonna.....	98
Forest tree-culture.....	98

LIST OF OFFICERS—1874.

PRESIDENT :

TRUMAN M. SMITH.. St. Paul.

VICE-PRESIDENTS :

E. H. S. DARTT..... Owatonna.
LEVI NUTTING..... Faribault.
G. W. FULLER..... Litchfield.

SECRETARY :

L. M. FORD..... St. Paul.

TREASURER :

AMASA STEWART..... Minneapolis.

STANDING COMMITTEES.

EXECUTIVE :

J. S. HARRIS..... La Crescent.
J. C. FLEISCHER..... St. Paul.
P. A. JEWELL..... Lake City.
O. F. BRAND..... Faribault.
J. T. GRIMES..... Minneapolis.

GENERAL FRUIT COMMITTEE :

WYMAN ELLIOT, H. J. BRAINARD, O. F. BRAND, E. H. S. DARTT,
THOMAS RAMSDEN, BARRETT TAYLOR, P. A. JEWELL,
ROBERT GOODYEAR, JOHN S. HARRIS, A. C. HAMIL-
TON, A. W. SIAS, LEVI HILLIGOSS,
F. G. GOULD.

LIST OF MEMBERS.

Abernethy, W. J.	Minneapolis.
Buckendorf, William.....	Minneapolis.
Brackett, George A.....	Minneapolis.
Booth, J. E.....	Minneapolis.
Bowerman, J. H.....	Faribault.
Brand, O. F.....	Faribault.
Carter, T. G.....	St. Peter.
Clark, C. H.....	Minneapolis.
Chowen, George W.	Minneapolis.
Cannon, William.....	Minneapolis.
Day, Ditus.....	Farmington.
Dartt, E. H. S.	Owatonna.
Foster, A. D.....	Minneapolis.
Fuller, G. W.....	Litchfield.
Fowler, William.....	Newport.
Fleischer, J. C.....	St. Paul.
Ford, L. M.	St. Paul.
Grimes, J. T.....	Minneapolis.
Gibbs, H. R.....	Minneapolis.
Gould, T. G.....	Excelsior.
Humphrey, Otis M.....	Minneapolis.
Hillgoss, Levi	Blooming Prairie.
Herrick, H. N.....	Minneapolis.
Howe, G. H.....	Minneapolis.
Hoffman, James.....	Minneapolis.
Higgins, S. B.....	Baxter, Iowa.
Harris, John S.....	La Crescent.
Jewell, P. A.....	Lake City.
Kilpatrick, Charles.....	Minneapolis.
Kramer, J. C.....	La Crescent.
Latham, A. W.	Excelsior.
Loring, B. M.....	Minneapolis.
Moulton, Thomas.....	Minneapolis.
Meyer, Ernest.....	St. Peter.
Nutting, Levi	Faribault.
Prescott, C. A.....	West St. Paul.
Ramaley, D.....	St. Paul.
Shaw, J. N.....	Minneapolis.
Stevens, John H.....	Minneapolis.
Smith, Truman M.....	St. Paul.
Stratton, L. W.....	Excelsior.
Stubbs, N. J.....	Long Lake.
Stewart, A.....	Richfield.
Tyler, Alexander	Minneapolis.
Wilcox, E.....	Trempealeau, Wis.

LOCAL AND COUNTY HORTICULTURAL SOCIETIES.

OLMSTED COUNTY HORTICULTURAL SOCIETY,

ORGANIZED MARCH 3d, 1873.

Secretary.....S. D. HILLMAN, Eyota.

HENNEPIN COUNTY HORTICULTURAL SOCIETY.

[The list of officers and reports of this society have failed to come to hand.]

HONORARY MEMBERS.

GEO. PEPPER.....	Pewaukee, Wisconsin.
A. G. TUTTLE	Baraboo, Wis.
O. S. WILLEY	Madison, Wis.
HON. WM. W. FOLWELL.....	Minneapolis, Minn.

P R E F A C E .

The second annual volume of the Minnesota State Horticultural Society is herewith submitted to the friends of horticulture and rural adornment, and all who are interested in the welfare and happiness of the people of our noble State, and with its publication the official connection of the writer with the society ceases. From the time it sprang into existence the writer has been a member of the society, and has attended every meeting held with the exception of two, and during most of the time has occupied an official position, and it is with pleasure that he surrenders the responsibility of an officer, not to retire to private life, but to enter the ranks and join in the battle until the victory is complete.

Of the value of this volume it may not be proper for me to speak. It speaks for itself to tell you that the society is steadily growing in numbers, influence and power for good. This volume contains a number of addresses and essays of great value, and the correspondence and reports are in my opinion one of its best features. The lists of fruits adopted for cultivation are very complete, and fully equal—quality and hardiness to rule—to the lists recommended by our neighbors of the Wisconsin Society.

The last (1872 and '73) winter had severely tried many varieties of fruit, and we expected that many of our friends would be discouraged, and inclined to raise the old cry of "no fruit country," but were happily disappointed, as the contents of this volume will show.

It will be noticed that the men who have taken part in the discussions and contributed papers are with few exceptions the pioneers of fruit growing in this State, and many of them have had large experience in testing varieties in various localities.

We for the first time present a list of Siberians for general planting. No doubt some of the varieties will be discarded in future years and their places filled with other and better, for this class of fruit is showing a capacity for improvement, but

there is very little risk incurred in planting them freely, as most of the varieties come early into bearing and fruit very abundantly.

For the deference shown me by the society I am very grateful, and feel that to one and all my heartfelt thanks are due.

JOHN S. HARRIS.

LA CRESCENT, Minn., 1873-4.

NURSERYMEN, FLORISTS AND GARDENERS OF MINNESOTA.

Bunnell, M. C., fruit trees and shrubbery, Money Creek.
Brand, O. F. & Co., general nursery stock of fruit, evergreen and ornamental trees, Faribault.
Bates & Northrop, general nursery, Stockton.
Bowerman, J. H., general nursery, Faribault.
Brimhall, William E., fruit and ornamental trees and garden vegetables, St. Paul.
Brown, James, vegetable garden, La Crescent.
Buckendorf, William E., florist, Minneapolis.
Booth, J. E., florist, Minneapolis.
Cook, C. P. & Co., hardy trees, shrubs and vines, Garden City.
Dartt, E. H. S., hardy apple trees, Owatonna.
Dean, J. H., nurseryman, Blue Earth.
Elliot, Wyman, nurseryman and gardener, hardy fruit and ornamental trees, Minneapolis.
Evans, E. P., nurseryman and dealer, Brownsville.
Ford, L. M., nurseryman and florist, St. Paul.
Fuller, G. W., nurseryman, Litchfield.
Fleischer, J. C., florist, St. Paul.
Goodyear, Robert, nurseryman, Mankato.
Grimes, J. T., small fruits, hardy apple and ornamental trees, Minneapolis.
Gould, F. G., nurseryman, Excelsior.
Gillmore, J. F. nurseryman, Faribault.
Harris, John S., fruit gardener and florist, La Crescent.
Hoffman, James, nursery and shade trees, Minneapolis.
Hermanson, J. A., nurseryman, Otisco.
Jewell, P. A., general nursery, Lake City.
Jordon, E. B., nursery, Rochester.
James, A. T., nurseryman, Smithfield.
Kramer, J. C., general gardener, La Crescent.
Latham, A. W., nurseryman, Excelsior.
Moulton & Co., hardy apples, Minnesota seedlings and Siberians, Minneapolis.
Martin, Lewis, nurseryman, Anoka.
Prentiss, D. W. C., nurseryman and dealer, St. Peter.
Stewart, A., nurseryman, Richfield.
Sias Brothers, nurserymen, Rochester.
Slee, John W., nurseryman and florist, Dundas.
Smith, Truman M., small fruits and grape vines, St. Paul.
Waller, G. B., nurseryman, Litchfield.
Wadsworth, H. S., nurseryman, Litchfield.

INCORPORATION OF THE SOCIETY.

ARTICLES OF INCORPORATION OF THE MINNESOTA STATE HORTICULTURAL SOCIETY.

Know all men by these presents, that we, the undersigned, John S. Harris, of La Crescent, Houston county, John H. Stevens, of Hennepin county, Wyman Elliot, Charles Hoag, J. T. Grimes, A. Stewart, R. J. Mendenhall, Peter M. Gideon and Charles H. Clark, all of Hennepin county, D. A. J. Baker, Truman M. Smith, D. A. Robertson, William E. Brimhall, H. J. Brainard, L. M. Ford and Wm. Paist, all of Ramsey county, and Thomas Ramsden of Washington county, O. F. Brand, A. W. McKinstry and Levi Nutting, all of Rice county, and P. A. Jewell, of Wabasha, E. H. S. Dartt, of Owatonna, Steele county, all of the State of Minnesota, do hereby associate ourselves together for the purpose of becoming incorporated under the name, and for the purposes hereinafter stated, pursuant to the provisions of title and chapter 34 of the General Statutes of said State of Minnesota, so far as the same may be applicable, and do now adopt the following Articles:

ARTICLE 1. This corporation shall be known as the Minnesota State Horticultural Society.

ARTICLE 2. The object of the society shall be to collect, condense and collate information relative to all varieties of fruits, flowers, and other horticultural productions, and dispense the same among the people.

ARTICLE 3. Any person interested may become a member of the society by paying to the Treasurer or Secretary, the annual fee of one dollar, and signing the constitution and by-laws.

ARTICLE 4. The amount of capital stock of this corporation shall be twenty-five thousand dollars (\$25,000), with privilege to increase it to \$100,000, to be held in shares of twenty-five dollars each.

ARTICLE 5. The officers of this society shall be as follows : President, one Vice President to reside in each Congressional District of this State, Secretary, Treasurer, and an Executive Committee of three or more members, all of whom shall be elected at the annual meetings of this society, which shall be held on the 3d Tuesday in January.

ARTICLE 6. The principal place of business shall be wherever the majority of the society may hereinafter designate.

BY-LAWS

ADOPTED AT THE ANNUAL MEETING HELD JANUARY 20-23, 1874.

DUTIES OF OFFICERS.

1. It shall be the duty of the President to preside at all meetings of the society, when present, and to deliver an address at the annual meeting of the same. In the absence of the President, one of the Vice Presidents shall preside in his place.

2. The Secretary shall record all the doings of the society, collate and prepare all communications, etc., for the public press, and pay over all money received from members, or otherwise, to the Treasurer, on his receipt; shall receive and answer all communications addressed to the society; establish and maintain correspondence with all local, county, district and State horticultural societies, and secure by exchange their transactions, as far as possible; to aid the President as an executive officer, in the dispatch of business relating to meetings of the society, and notices of horticultural and similar meetings of general interest, and report to the annual meeting of the society an abstract of the matter that has come into his possession, which shall become part of the transactions for the current year, and shall be prepared by him for the public printer.

3. The Treasurer shall collect and hold all funds of the society, and pay out the same only on the order of the Secretary countersigned by the President.

4. An Executive Committee of five shall be chosen annually, who shall, in connection with the President and Secretary, (who shall be members ex-officio) have in charge all matters pertaining to the interests of the society; shall revise all matter coming into the hands of the Secretary, and pass upon the same their approval before its submission to the annual meeting

5. The Executive Committee may call a meeting of the society at any time and place they may deem advisable for the interests of the society, giving at least thirty days' notice through the public press, and shall in no case incur any ex-

pense exceeding fifty dollars except by authority of the vote of the society at its annual meeting, when the specific object and the amount so appropriated shall be designated.

6. The President, at each annual meeting of the society, or as soon thereafter as practicable, shall appoint a General Fruit Committee, consisting of one member from each Senatorial District in the State, and it shall be the duty of each member to report upon the fruit crop in his respective district annually; also a limited list of fruits best adapted to general cultivation in the district which such member represents.

7. That committees on vegetables and market gardens; flowers and floriculture; trees for the forest and forest culture, and entomology, be appointed each year, whose duties it shall be to report on their several topics to this society at the annual meeting.

TRANSACTIONS
OF THE
MINNESOTA STATE HORTICULTURAL
SOCIETY.

ANNUAL MEETING HELD AT MINNEAPOLIS, JANUARY 20, 21, 22 AND 23, 1874.

Pursuant to notice given through the Farmer's Union of Minneapolis; and the principal periodicals throughout the State, and in accordance with provisions of the Constitution, the members and friends of the State Horticultural Society met in the Council Chambers of the City Hall, at Minneapolis, at 10 A. M., January 20.

There was quite a large attendance, and an unusual interest shown in the cause of horticulture, and a strong desire to learn how to avoid a repetition of the disasters of last winter (1872 and 1873.)

A table was set up in the hall upon which was spread collections of fruits, flowering plants, seeds for distribution, and samples of wines, jellies and preserved fruits, &c. But the display, though better than we expected, was much inferior to that shown at the annual meeting in this city two years since, and told plainly that misfortunes had overtaken us and dashed many bright hopes to the earth, but like truth, which, "crushed to earth, will rise again," so is horticulture destined to become a grand success in our noble State. Severe winters may visit us, and corrupt and ignorant Legislators may defraud us of our rights, and rings may cripple us for a time, but the fruit-growers of Minnesota are "iron-hearted men," and they are searching for "iron-clad" trees. They have nailed the flag to the mast, and their battle cry is: "Fruit for ourselves; fruit for the millions that will soon people our State; fruit to load our railroad cars and steamboats and send to other lands. We will have fruit or perish in the attempt."

The meeting was called to order by the President, Truman M. Smith, of St. Paul; and the Secretary, J. S. Harris, of La

Crescent, being out of health, C. H. Clark, of Minneapolis, was chosen Assistant Secretary.

ADDRESS OF WELCOME.

Col. J. H. Stevens, on behalf of Mayor Brackett, extended to the society the following address of welcome:

Mr. President and Gentlemen of the State Horticultural Society:

I am directed by Mayor Brackett, who is unavoidably absent, to extend to each one of you the hospitalities of the city. The citizens of Minneapolis feel honored that the society, in its wisdom, selected this place for the purpose of holding the annual meeting. They have ever taken a deep interest in the glorious cause of horticulture, and they will endeavor to make your sojourn with us pleasant. They doubt not that your deliberations will be attended with much benefit to the State. You have their best wishes and sympathy in all that appertains to your noble calling. They bid you God speed in your undertaking, fully believing that the day is not far distant when the apple, through your efforts, will be to the manor born, while the rose and kindred flowers will be household treasures appreciated by all who are fond of the beautiful.

PRESIDENT SMITH'S REPLY.

Mr. Smith, in his reply to the above, remarked that the society had selected Minneapolis as their place of meeting feeling its great interest in horticulture as evinced by the choice fruits in their markets, and by the ornamental trees, and numerous and well-filled green houses and conservatories and beautiful flower gardens that beautify your many pleasant homes in your young and growing city.

He also thanked the citizens in behalf of the society for their proffered hospitality and kindness.

COMMITTEE ON ARRANGEMENTS.

As the Executive Committee had been unable to prepare a programme for the meeting, a motion was made and carried that a committee of three be appointed to present topics for discussion, and prepare an order of business for the meeting; committee to report at 2 P. M.

A. T. Stewart, of Hennepin, P. A. Jewell, of Wabasha, and Theodore Bost, of Carver county, were appointed.

The Secretary read a communication from G. E. Morrow, Secretary of the Wisconsin Horticultural Society, offering to

exchange fifty copies of their Transactions for 1873, for fifty of ours for the same year. The communication was accepted and a resolution passed instructing the Secretary to exchange fifty copies of the Minnesota State Horticultural Society Reports for fifty copies of the reports of the Horticultural Society of Wisconsin.

On motion of Mr. Ford, of St. Paul, a committee was appointed and instructed to proceed to the State capitol and secure all the State Horticultural Reports not in use there, and bring them before the society on Thursday morning.

A short time was spent in free conversation, and the society adjourned to 2 P. M.

AFTERNOON SESSION.

The meeting was called to order by Vice President E. H. S. Dartt, of Owatonna, when the following report from the Committee on Topics for Discussion, and Order of Business, was presented by P. A. Jewell :

1. What tests are necessary to fully establish the perfect adaptation of any variety of apples to the peculiar and trying climate of our State.
2. Best sorts for cultivation.
3. Transplanting.
4. Cultivation and protection.
5. Time and manner of pruning.
6. Diseases to which apples trees are liable, and their treatment.
7. Insects injurious to trees and fruits, and the most economical and efficient means of destroying them.
8. Pear culture.
9. Plums.
10. Cherries.
11. Grapes.
12. Currants.
13. Gooseberries.
14. Blackberries.
15. Raspberries.
16. Strawberries.
17. Cultivation of forest trees for timber protection.
18. Deciduous, shade and ornamental trees.
19. Evergreens.
20. Ornamental shrubs and plants.
21. What soils are best adapted to the various kinds of fruits, and what manures promote the most healthy growth.
22. What new kinds of fruit appear worthy of cultivation.
23. Suggestions relative to the granting of premiums at State Fairs.

The report was accepted, and the society proceeded to the discussion of the subjects in the order named.

PLANTING APPLE TREES.

Considerable discussion followed on the first subject as to the best locality for planting apple trees, and the time necessary to test their hardiness. It was asserted as an established fact that many varieties of trees would grow and produce apples on or near the borders of our lakes and rivers when they would not flourish on the high prairies.

The severity of the last winter on fruit trees had made the question one of great importance as to which kind of fruit trees should be recommended and what tests should be applied. Mr. P. A. Jewell stated that his experience proved that many varieties, such as the Ben Davis, which have come into extensive use, had failed to stand the test of Minnesota climate; that all the samples of fruit we have is but the growth of a remnant of hundreds of fruit trees that we have planted. Because one or two trees out of a dozen different varieties stood the test, it should not be taken as proof of their worth. It is impossible to test any kind of trees with one, five or ten years' growth.

Messrs. Hoffman, Stevens, Stubbs, Dartt, Clark, Bost, Fuller and others spoke at length, and Mr. Clark said he thought that although the last winter was an exceptionally severe one, it was quite safe to assert that any tree that had stood the test of this climate, planted in different parts and in different soils, was sufficient to establish its hardiness. He accordingly presented the following resolution:

Resolved, That this society will not recommend for trial in this State any variety of apple tree that has not stood a test of at least five years in different locations and soils throughout the State.

Mr. Jewell said that he would not object to trying any tree five years, but he would not recommend it for planting in five years—not less than ten years. It was necessary for trees to have a test of that length of time, or at least till they had a test such as only last winter could give.

Mr. James Hoffman thought that dwarf varieties would have to be resorted to yet, since the standard had failed.

Rev. Mr. Fuller thought that last winter was a sufficient test for any tree.

Mr. Bost said that in his vicinity the old trees had been killed and not the younger varieties.

Mr. Jewell offered the following in amendment to Mr. Clark's resolution:

That we do not recommend for general planting in large quantities any variety that has not stood a test of ten years in a variety of soils and situations, and shall have passed through at least one winter of great severity.

Another warm discussion arose on Mr. Jewell's amendment.

The Secretary, J. S. Harris, offered the following resolution for the amendment:

Resolved, That a test of five or more years in ten or more different localities, and endurance of such a winter as the last without injury, should be a sufficient test of hardship to warrant this society in recommending for general cultivation.

Mr. C. H. Clark thought it was unjust to those who planted trees, to impose such a length of time on any variety of trees before they could be recommended for general use.

The resolution offered by Mr. Jewell was adopted.

Variety of apples next taken up.

BEST SORTS FOR CULTIVATION.

The next subject was the best sorts for cultivation.

It was moved by Mr. Dartt and seconded by Mr. Gould, of Excelsior, that the Duchess of Oldenburg be counted first on the list.

Carried.

It was moved that a committee be appointed to present a list of trees to be regarded the best.

The President appointed Messrs. Jewell, Dartt and Hoffman as such committee.

TRANSPLANTING.

Transplanting was the next theme of discussion. Col. Stevens introduced Dr. O. M. Humphreys, of this city, to the meeting.

The Doctor had not been long in this State, but always had a deep interest in fruit and tree culture. His experience had always favored his preference for fall planting. He always planted immediately after coming from the nursery, and with as many roots as possible. His spring transplanting had not been so successful. The Duchess tree, from his observation, has proved the best. The crabs in sandy soil and in different parts of the State, had proved a failure, although in heavier soil it may do better. His grape vines, of twenty varieties, he always plants deep, and they passed through last winter safely.

Mr. Hoffman had been in the State twenty-six years; sixteen years he had planted forest trees, and five or six fruit trees. He always plants forest trees in fall, and lifts or heals in his fruit trees in fall and plants them in the spring. Duchess he favors best, Haas next, Ben Davis not at all.

Mr. Jewell thought if fruit trees were lifted in the fall they would survive the winter, but all fruit trees should be

planted in the spring. They should be dug up early in the fall and carefully laid away till spring, when they suffer but little injury in transplanting. It is not safe to take even the hardiest varieties from a nursery and transplant them.

Mr. Gould indorsed Mr. Jewell's opinion of transplanting, but he objected to the manner of burying trees in winter. He recommended a dry place, not putting the body of the tree in earth at all,—by digging a trench on the north side of a hill, and leaning the trees at an angle of 45 degrees, so that the water will not rot the bark.

Mr. Jewell preferred a high and dry location, burying about two feet, digging a deep trench which will take in the trees entirely below the surface. After placing the trees in these trenches he places rafters or ties across the top, covering with a board, then he covers over all with dirt; after a freezing he covers with straw or litter.

Mr. Harris gave his system and experience, which conformed nearly or quite to that of others.

He had transplanted apple trees in the autumn with good success, if it was done early and the soil was not too dry, but preferred to receive trees in the fall and plant as early in the spring as the season would permit. Said his plan for wintering the trees was to select a dry, sheltered place and dig a trench eighteen inches deep and about the same in width and long enough to receive what trees he had.

Then open the bundles and take one tree at a time and remove with a sharp knife all bruises from the roots, cut back the tops to correspond with root and place in the trench, standing at an angle of about 45 deg., and put the earth back over the roots one tree at a time, being sure to leave the work when completed so that water will run from it. By this process had kept his trees for spring planting for many years and never had one injured. If the trees are received from the nursery in very cold weather, the pruning and making ready should be done in the barn or cellar, to prevent their being long exposed to frost.

CULTIVATION AND PROTECTION.

This subject being next taken up, was opened by Mr. Grimes. He believed in deep ploughing with proper pruning, while for protection mulching was necessary, and he would recommend a growth of something like raspberries in parallel rows to trees, as incidental to the same.

Mr. Dartt favored thorough cultivation.

Mr. Jewell believed in thorough cultivation, particularly during the first three or four years. In order to get trees

well established would commence as early as possible. He warned the society against late cultivation as tending to late growth, thereby jeopardizing the safe passage of the trees through the winter. He would mulch in the fall of the year. There is nothing better than straw, which would hold the snow, taking due caution against injury from mice.

Mr. Dartt had had most satisfactory experience in mulching with earth, sowing oats, and as they grew working them into the soil.

Mr. Hoffman approved of cultivation. Said it kept the soil in condition to receive and retain moisture.

The Secretary said that his experience had favored cultivation up to the last winter, but during that winter his losses had been most severe where the ground was cultivated. Believed liberal mulching would have saved most of his orchard. Had trees of Northern Spy and Perry Russet in grass not materially injured.

Presented the following report from S. B. Klough, Winona county:

"I have an orchard of 65 trees four years planted on high ridge land; soil clay loam. Trees of those varieties nurserymen call hardy, just commencing to fruit. Land seeded to clover last fall. I hauled wheat straw and put it about a foot deep around the trees, and out as far as the roots would reach. Lost one tree, a Dominie, the rest all right. The tree that died had never done well."

PRUNING AND TIME TO PRUNE.

In consideration of this subject, Mr. Dartt would only prune to please the eye. He thought little pruning should be done, and would prune about three feet up.

Mr. Jewell thought that three feet was high enough.

Mr. Grimes thinks the less pruning trees have the better; it should only be done when limbs grow in improper places.

Mr. Howe thought that trees could be shaped in any way desired. If scions are to be cut they should be cut from the tops of the tree. We want the roots to run deep so that we can plow near them, and the tree should be trimmed high up.

Mr. Gould thought that one should use judgment in trimming trees. It was not safe to cut large limbs.

J. S. Harris thought we should not cut off the Transcendent too early; he found budding on Transcendents a failure.

Mr. Jewell thought the trouble with Mr. Harris' failure in budding on Transcendents was in not cutting away the top early enough, which caused bleeding.

A motion was made and carried to adjourn till evening.

EVENING SESSION.

The President in the chair called the meeting to order at 7 P. M. The Secretary being absent, Mr. Latham was appointed Secretary *pro tem*.

The President then announced the topic for discussion.

THE DISEASES TO WHICH APPLE TREES ARE LIABLE AND THEIR TREATMENT.

The discussion was opened by Mr. Dartt. He considered that the blight affected fruit trees, as disease does the human family. The Transcendent and seedling crab are most liable to blight; the Duchess of Oldenburg and Soulard crab the least. The Tetofsky is not so free from it as the Duchess. The Saxton and Golden Russet also suffered severely from it. He preferred the severity of winters, like the last, to the blight.

Col. Stevens could not agree with Mr. Dartt. He had never heard of any successful remedy for it, but believed that the frosts of winter were worse than blight. It was not generally considered dangerous to fruit trees, as it does not affect them oftener than once in twenty or thirty years. It has been a number of years since the blight made its appearance in Minneapolis. I have heard that a few years since it prevailed to such an extent in Southern Illinois as to threaten the total destruction of the orchards, but has since disappeared.

Mr. Smith had lost two Soularas by the cause of blight—esteems the fruit very highly. Said that until lately Mr. Harris had thought the blight caused by electricity; believed that Mr. Elliot considered it the result of a certain fungus in the atmosphere, but he did not think either supposition entirely correct, as the electricity, according to that theory, would destroy the trees every year. He thought the blight was contagious, and could only be regarded as a disease.

Mr. Gould also thought it was contagious, and was the result of fungus matter in the atmosphere, and there was no remedy found for it yet. He had examined the trees affected with it with a powerful microscope, but could not detect the cause. Stated that his Transcendents were the first to blight.

Dr. Humphreys asked what should be done with a tree in a garden of a hundred others, that had blighted for two or three years?

Answered by Col. Stevens—"Dig it up."

Dr. Humphreys then asked if wood ashes had been used, and further stated that all diseases were self-propagating, and that if the cause of the blight is parasites, a preventive ought

to be found in disinfectants. We might approximately decide as to this cause by their use. He intended to try on his own grounds a solution of potash or strong lye. Carbolic acid and other similar disinfectants might be tried with probably good effect.

Mr. Stewart has trees with wood ashes thrown around them, and they have suffered as much as others.

Mr. Gould advised cutting off all diseased branches and burning them.

Mr. Jewell does not profess to know the cause of the blight, although he has suffered much from it. His experience with it was more in nursery than orchard. Thought the more rapid the growth of the tree, the more liable to blight; that the disease was transmitted through the atmosphere, and wherever there was a rupture in the bark of the tree there it lodged. The blight attacked some Transcendents 4 or 5 years old, and spread rapidly through his nursery. Would keep Transcendents and Hyslops from the near proximity of a growing nursery, as they are more subject to blight. He also notices that trees not pruned suffered less than those closely pruned. Had used a tree plow to cut the roots of nursery row trees which were badly affected with good success in arresting the disease. He inferred that from arresting the growth of the tree in this way worked the favorable result.

The Transcendents and crabs as a class were most subject to blight, and in the selection of varieties to plant care should be taken as to their kind. Would not recommend setting Transcendents, and other varieties subject to blight, in same orchard with others, as they would be liable to cause it to spread among the others. Had top grafted a Hyslop. The blight killed the body and the tree is now dead. This liability to blight is an objection to using crabs to top work upon, and if used for this purpose all sprouts should be kept away. The Montreal Beauty blights worse than any other. .

INSECTS INJURIOUS TO TREES AND FRUITS, AND THE MOST ECONOMICAL AND EFFICIENT MEANS OF DESTROYING THEM,

Was the next topic taken up.

Mr. Brand considered the best way to destroy the aphid was to watch them carefully as they appeared upon the top leaves, and destroy by rubbing between the hands. If left two weeks they will spread rapidly. He suffered much the past season from the borer. By close examination he had been able to detect their first appearance by the incisions made by the perfect insect in depositing the eggs, and the best way to destroy them was to crush the eggs by a pressure on the bark.

Mr. Stevens had had strong soap suds recommended for the louse, to be applied to the leaves; had tried it and found two applications to work an effectual cure.

Mr. Jewell had tried solution of ammonia and decoction of tobacco, the latter of which he found the best, and would further say that it was the only use for which it was fit.

Mr. Cannon said tobacco water (the leaves to be immersed in it or apply with syringe) is the best remedy I know of.

Mr. Howe suggested evening bonfires, or that a pan of burning tar be placed among the trees as an economical way of catching and destroying insects.

Mr. Dartt regarded the apple worm as the most destructive to the apple in Minnesota and throughout the north-west. Thinks this worm was brought here in barrels of apples shipped from below. Described Weir's trap for catching them.

Dr. Humphreys inquired if the fact of a leaf-louse depositing its eggs on a tree one season would render it more liable to its ravages another year.

Mr. Gould thought it would, from his own observation.

Mr. Stewart said that a tree that was once attacked by leaf-louse is more liable to be attacked by them the next year, as their eggs are left on the branches and are not injured in the winter.

Mr. Dartt inquired if the aphid or louse did not become a fly.

Mr. Gould said they were green when young, but when fully developed they became a black fly not much larger than a louse.

Mr. Stewart had discovered a white grub among his strawberry vines that destroyed them by eating off the roots, and was unable to account for it.

The President thought it was the larvæ (*Lachnosterna*) of the May beetle, and that soap-suds was the best remedy.

Mr. Jewell said his nursery had suffered considerable from the beetle. The ground that was formerly covered with poplar trees was infested the least. He thought the best remedy was to go through the orchard every day, and catch and destroy them.

At this stage of the discussion Col. Stevens offered the following resolution, which was adopted without discussion:

Resolved, That a committee be appointed by the President to prepare a memorial to the Legislature, requesting provisions to be made for the appointment of a State Entomologist.

Col. Stevens, and Messrs. Dartt and Jewell were appointed such committee.

Discussions resumed.

Mr. Dartt asked if ants are injurious to trees.

Mr. Cannon considered them the best preservative of the trees.

Mr. Bost thought the ants only infested the trees for a honey substance that the aphids drop when worried, and that this bothering of them might compel them to drain more sap from the tree.

Mr. Jewell moved to consider to what causes are to be ascribed the wholesale destruction of fruit trees the past winter or spring.

Carried.

Mr. Stewart ascribes this loss to the immaturity of the wood and severe freezing.

Mr. Dartt considers the severe freezing alone the cause.

Mr. Stubbs—Caused by severe freezing. Animal life can endure only a certain degree of cold, and the tree, too, has its limit.

Mr. Carter, of St. Peter, thinks the sun somewhat to blame.

Mr. Gould believes the extreme cold did the damage. Saw scions of Flemish Beauty pear last January that were entirely dead, and this before the season had become warm. Grape vines were also killed down in Ohio, eight miles below the lake shore; vines that had never been affected before.

Mr. Brand does not consider the cold altogether the cause, but the dry weather and dry soil were fully as much to blame. On the grounds of Mr. Drew, where he had seen the hardier varieties dead, it was dry soil throughout. He had seen the Ben Davis killed by cold weather, but not the Duchess of Oldenburg or Fameuse.

Dr. Humphreys questioned whether the drouth of the preceding summer and fall had not impaired the vitality of the trees and rendered them easily overcome by the cold.

Mr. Jewell believes the extreme cold weather the cause of this loss. In his locality it was quite wet in the fall, and trees could not have been killed by dryness of soil. Thinks the roots of unmulched trees were killed by excessive cold, and not by lack or excess of moisture. Thinks there is a certain lowness of temperature at which any variety would be killed. Trees ripen up and stand the winter better if the ground is dry.

Mr. Dartt knew of hardy varieties like Transcendents to have root killed while the tender ones had not. The plum he had introduced from Wisconsin stood the winter, while the Illinois variety succumbed to it.

Mr. Brand stated that J. O. Milne had not lost a single tree of Ben Davis; and this, he considered, was due to the fact that in that part of the State (Sauk Centre) there were heavy

rains in the fall, and the same was true of all trees in wet places.

The President said that the experience throughout New England during the last winter was that trees the best protected by snow suffered the most. In his own orchard the Minor plum, that had winter killed three or four years ago, came through the last winter all right. Those trees that he cultivated latest in the season suffered most. Trees are injured by sudden changing. Immature wood, and the early and severe frost was the cause of his loss.

Dr. Humphreys apprehended a severe winter and protected some tender varieties with wrappings, and they came out all right.

Mr. Bowerman never knew trees covered with snow to survive cold weather any better than those entirely exposed.

Mr. Jewell thought the drouth had nothing to do with winter killing.

Meeting adjourned to 9 A. M. to-morrow.

WEDNESDAY, JANUARY 21st.

Society met at 9 A. M. President Smith in the chair.

The discussion was resumed on the cause of the destruction of fruit trees last winter, and was opened by Mr. Harris of La Crescent. He had lost a great many fruit trees last winter. Some varieties were almost entirely killed, apparently root killed, as they did not sprout again from the roots. Among those that suffered the most was Northern Spy. Lost one Transcendent; some others made but feeble growth because a portion of the roots were injured. The Duchess stood the winter well. Lost one or two Red Astrachan and Tallman Sweet trees. His opinion was that the wholesale destruction of trees last winter was from exceeding dryness of soil the previous fall, and the severe cold the winter following. He had trees of Perry Russett, Northern Spy and Early Harvest that had been exposed to dripping water and the shade of sheltering buildings that escaped injury. Some trees that had grass or weeds around them came through very well.

When he discovered that the winter had been so unfavorable for trees, he had caused the following circular to be published in the Farmers' Union, asking for information, the replies to which will be published under the head of Reports.

CIRCULAR.

LA CRESCENT, May 22d, 1878.

To the Fruit Growers of Minnesota :

We have just passed through the hardest winter known to the oldest citizens of this State, and there were peculiar circumstances attending it that will make it a test winter for many years, if not for all time. The winter set in early and dry, and frost penetrated to a great depth before any considerable snow fell. Many losses have occurred to our fruit growers by the destruction of trees and plants. We desire to profit by the severe test by collecting such facts from the people as will enable us to place before them a list of fruit trees that are *iron-clad* under all circumstances, and therefore solicit from you answers to the following questions as soon as possible :

- 1st. What varieties of apples have you planted in this State?
- 2d. What varieties have come through the last winter without receiving any injury in root, trunk or branches?
- 3d. What varieties have received no injury to fruit buds?
- 4th. What is the nature of your soil? What is the exposure? What cultivation and protection do you give?
- 5th. Are you raising any seedlings that are perfectly hardy, and are any of them good enough to take the place of Russets, Seek-no-Furtherers, and other varieties that we are obliged to discard?
- 6th. Are you raising pears, and have you any variety that stood the test of last winter without injury?
- 7th. What is the hardiest and best strawberry for your locality?
- 8th. What two varieties of grapes are the best with you?

Notes upon plums, cherries and other fruits will be acceptable.

You are further informed that this society intends to be represented in the meeting of the American Pomological Society, to be held in Boston next September, and you are requested to furnish the delegates with specimens of your fruit for the exhibition. Please correspond with the officers of this society, and they will make known to you the time and manner of sending them.

JOHN S. HARRIS,
Secretary of Minn. State Horticultural Society.

Mr. Latham—The cause of this universal loss must be some one common to the whole State. In some localities the soil was dry, in others wet; in some the ground was frozen deeply, and in some the snow fell deeply before freezing. The only common cause was the severe and long-continued cold, which he thinks must be the grand destructive cause.

Mr. Hoffman does not consider cold the only cause of this loss. Has noticed that where his soil has been dry, the roots have been easily killed. Has lost shade trees from this cause. As a preventive for this cause of loss, cultivate thoroughly and keep the ground moist.

Col. Stevens asked if his, Mr. Hoffman's, experience was not that for many years all the tops and branches died off, and sprouts came again from the roots.

Mr. Hoffman replied that he had thoroughly tested with fruit and shade trees, and found if mulching was plenty there was no danger of root killing. He had sometimes sustained

injury to trees in severe winters by top killing, and they sprouted again from the root. He lost only two trees last winter. His soil is sandy, and cultivated, and slopes east.

Mr. Ford related his experience, which is very interesting but unfortunate, and would leave the impression that his was a very unfavorable locality for fruit trees.

His loss last winter was from root killing. He had a Transcendent on one side of a walk and two Tetofskys on the other. The Tetofskys are dead, and the Transcendent is alive and bore full last year. He wants to know what made the difference between the two sides of the walk if the crab is not the hardiest.

Mr. Hoffman answered: Because there is a pond of water near the walk where the Transcendent stands.

Mr. Fuller, of Litchfield, said his nursery was on soil of light sandy loam, in a most exposed place on open prairie. Wherever snow covered the trees they were preserved, and where most exposed they perished; the same was true of White Elm, Mountain Ash, &c. It was the hard and repeated freezing of the sandy soil that killed them.

Mr. G. P. Pfeffer, of Pewaukee, Wis., was introduced as a delegate from the Wisconsin Horticultural Society, and afterward elected an honorary member, and invited to participate in the debates.

He said it is always well to consider the soil and situation in which trees were planted. Cold affects a tree very much the same as heat, and will in like manner evaporate the sap; and a root being exposed to a certain degree of cold is certain to perish. He had ascertained by actual measurement before and in time of a hard freeze that the root and trunk of a tree will shrink nearly one-third by freezing; probably by the evaporation of the sap. Related his experience with ashes. The soil in his nursery was clay loam, and very stiff. He applied ashes liberally to a block for trees and incorporated them with the soil by plowing and harrowing till the soil became loose, pliable, and would not retain water. The trees on this ground grew well and looked better than any others he had; but last winter they root-killed, while those on land not prepared with ashes were not so injured. The varieties killed were the hardiest he had.

Mr. Harris thought the application of ashes on clay soils made them more porous, and in the absence of fall rains it was in a condition to invite deep freezings, which extracts the sap from the roots; there being no moisture in the ground when they thaw out, death must ensue. The roots freeze harder when encased in a dry substance than a wet. A bucket of water would freeze over in a cellar before vegetables would receive injury.

Mr. Bost said it is thought in his locality that one principal reason why the losses were so great was because the soil was so wet.

Mr. Bowerman, of Pioneer Nurseries, Faribault, said that part of his nursery was on high and dry ground, and some parts of it on low grounds; on high grounds lost less by root killing than on low. Lost but few young trees by killing of root, but lost heavily by tops dying.

Mr. Howe, of Hennepin county, said some think the loss is from dryness, some from wet, and some from cold. He thought the cause was the extreme changes of the weather; the extreme cold of January, and the mildness of March, followed by sudden freezing and thawing rapidly.

Mr. A. Stewart, Hennepin county, says the sole cause is because the root is not hardy enough. Has experimented on this subject fifteen years. Roots must be perfectly hardy or thoroughly protected.

Mr. Ford offered the following resolution, which was adopted:

Resolved, That names of places of different speakers be given in the report.

Mr. Stewart said his experience was mostly confined to Hennepin and Le Sueur counties.

The Secretary moved that we suspend the regular discussion of topics, as he had some reports to present. Seconded by Mr. Ford.

The Secretary read a report from the Olmsted county Horticultural Society. The Society was organized on the 3d of March, 1873, with the following officers:

President—Wm. Somerville, Eyota.

Vice President—J. B. Clark, Rochester.

Secretary—S. D. Hillman, Eyota.

Asst. Secretary—J. W. Mason, Rochester.

Treasurer—J. M. Westfield, Rochester.

The regular meetings are held the third Saturday in each quarter. Have already discussed apples, grapes, small fruits, &c.

On motion, the report was adopted, and ordered to be placed on the minutes.

The Secretary read the following extract from a letter received from Mr. D. W. Prentis, of St. Peter:

"I wish to say that there is a man here from Finland, where the thermometer goes down to 56 degrees below zero. He says high up in the mountains, or at quite an elevation, where there is no rain all winter, they raise fine apples, and winter apples at that, and also nice pears. I thought that such varieties would stand our climate. I learn that twenty-

five Finland emigrants are at the Reception House in West Brainerd. Have written to the postmaster to have him obtain an interview with them and see if these statements were confirmed. I also wished to learn if some one could not bring out some scions.

"Would it not be proper to have the statements investigated, and if wise, ask the Legislature to appropriate a sum sufficient to obtain such fruits as are hardy in that extremely cold climate?"

Moved that the communication be received and placed on file to be embodied in the proceedings.

The Secretary then read his annual report to the society.

ADDRESS OF THE SECRETARY OF THE STATE HORTICULTURAL SOCIETY.

Mr. President and Gentlemen of the Minnesota Horticultural Society:

The official position in which I am placed by your favor makes it my duty and privilege to address you at this time, reporting to you the progress we have made during the past year and the hopes and prospects of the future.

THE LAST WINTER.

The winter of 1872-73, for long continued and extreme cold storms and fierce winds, stands without a parallel in the history of our State. During the autumn preceding, the rainfall was very light, and was followed with but light falls of snow and hard freezing, that continued over most of the State until the 7th of January, when we experienced the most fearful snow and wind storm known within the memory of the oldest inhabitants, which continued for three days, and carried mourning and sorrow into many homes, and caused great loss and suffering to stock in the new and sparsely settled parts of the State. Previous to this storm the ground was frozen dry to the depth of three to five feet. The winter had set in earlier than usual, and but few farmers and gardeners had given proper mulching or protection to their trees and plants. The whole winter ranged extremely cold and the spring was rather backward, and a long drouth prevailed in some sections of the State.

What do we witness as the result of these unfavorable influences all combined in one year's experience? Many orchards of great promise were ruined, and many others were seriously injured, while a very few were comparatively unharmed.

With the view of drawing out as many facts as possible, to ascertain the extent of the injury, and the varieties of apples

that were not injured, or that were injured the least, I caused a circular letter to be published in the Farmers' Union of May 24th, 1873. In reply a number of communications were received from different parts of the State, and many others have reported through the columns of the Union. From this correspondence I am enabled to report that the Duchess of Oldenburg and Tetofsky are damaged the least.

The Red Astrachan, Haas, Fameuse, Tallman Sweet and St. Lawrence, rank next best among those varieties which are in general cultivation, and they stand for hardiness about in the order they are named. The Siberian crabs and a number of the hybrids or seedlings of the Siberian have generally proved to be perfectly hardy. I also find that some other varieties have come through all right where they had been grafted upon crab stocks. I have heard of a few instances where the Early Harvest, Northern Spy and Perry Russet did not show any injury.

The fire blight has prevailed quite extensively, and is doing serious damage to the varieties of Siberian crab. The losses of last winter to the apple and the blight which is affecting both the crab and apple trees to a certain extent have had a tendency to discourage a few of our farmers, but the professional horticulturists and many of the amateur fruit growers appear to be hopeful, and freely express the opinion that in spite of losses and failures we are gaining ground, and that our efforts will eventually be crowned with success. Doubtless we shall learn lessons from the past year's experience that will prove of great advantage to us in the future. I received but two reports of orchards that did not sustain any serious injury from the winter. One in Winona county, which is on a high ridge of land, seeded down to clover, and with trees mulched around with wheat straw to the depth of one foot, contained sixty-five trees, in varieties nurserymen term hardy, and lost but one tree, a Dominie. The other was in Fillmore county, on high prairie land cultivated in corn. The stocks left standing over winter came through splendidly. Orchards have generally fared best that were not cleanly cultivated. As the greatest losses arose from root-killing, (and much of that could have been prevented by mulching) this meeting should take a positive stand and prompt action upon the matter, and propose some method by which hardy roots and stocks for grafting and budding upon may be raised by our nurserymen, and in quantities sufficient to meet our present requirements.

SUMMER MEETINGS.

The officers of the society did not deem it to be expedient

to call you together for meetings of exhibition or discussion during the last summer, but a call was made for a meeting to be held in St. Paul, upon the evening of the second day of the State Fair, which, from causes beyond our control, was very near a failure. No business was transacted except the appointment of examining committees and determining where the annual meeting should be held.

THE AMERICAN POMOLOGICAL SOCIETY.

The American Pomological Society held their last biennial session in September last, at Boston, Mass. Our society was represented in the meetings by but one delegate, Wyman Elliot, of Minneapolis, from whom we expect a report. Owing to the earliness of the meeting and the unfavorable condition of the fruit crop, we could not make an exhibition that would convey any correct idea of the advance we have made in horticulture, and therefore did not consider it expedient to attempt to show our fruits. The next meeting is appointed to be held in Chicago, in 1875.

FALL EXHIBITION.

The exhibition of fruits, flowers and vegetables, at the State Fair, held in St. Paul in September last, was a fine success; in most particulars far surpassing our most sanguine expectations. I think this was the result, in the first place, of a determination on the part of our fruit growers to show that all was not lost, and they would fight it out on that line, *i. e.* the hardy stock that is left, and in the second place, from the liberal additions that have been made to the premium lists since the influence of the State Horticultural Society has been brought to bear upon the State Agricultural Society in giving the management of the horticultural department over to our direction.

The premium lists in the floral and vegetable departments should be thoroughly revised, and the result would be an increased number of exhibitors, a lively competition and an improvement in the culture of the articles exhibited for premiums.

Some additions ought to be made in the fruit department. In the past, the Siberian crab has shown a capacity for great improvement, and we now have some of its seedlings and hybrids that are perfectly hardy.

The fruit is received with favor for home consumption, and is fast coming into general use for pickles and sauces, and will probably soon have a commercial value next to the common

apples. I think they ought to be placed upon the premium lists in a separate class and advanced to the position which they merit. Some varieties are reported to be long keepers and others superior for eating from the hand.

MEETINGS FOR DISCUSSION.

One meeting per year is not sufficient to do justice to the questions which are demanding our attention, but it has been found difficult to get the members out to more. I do not believe this is the result of a want of interest on their part. Our State is large, the summers are short, and the fruit growers and farmers are crowded with work, and considerable time would be consumed in going to and returning from a summer meeting, while the traveling expenses incurred by those living in remote parts of the State is an item of considerable importance. Perhaps a practical remedy for this would be the division of the State into districts, and holding summer meetings alternately in the several districts. I think this hardly practicable at present, but it can be brought about in time.

SEEDLINGS AND NEW FRUITS.

Nothing in the line of seedlings or from the new varieties has come up for our notice since the last annual meeting, and from the few varieties of seedling apples exhibited at the last State Fair, it is evident that some of the competitors for favor will never again be heard from. The Wealthy of Excelsior still maintains its reputation for hardiness, and doubtless could with safety be placed upon the list for general cultivation. Experiments with seedlings are being made by individuals in various parts of the State, and some parties are conducting them upon a system that cannot fail to make our future in apple growing equal to, if not in advance of, any State in the Northwest. (I would refer you to a communication from Peter M. Gideon, of Excelsior, published in the December number of vol. for 1873 of the Horticulturist, p. 369.)

The Wealthy originated with and was brought to notice by Mr. Gideon. He has now under cultivation several hundred seedlings that bear marks of being a cross between the Crab and Wealthy Duchess, Blue Pearman and other superior varieties that endured the severity of last winter without injury. If any improvement can be made it must be by hybridizing our best varieties of apples with the crabs or the variations which come about through cultivation, or the planting only of home-grown seeds of the hardiest varieties. Necessity is called the mother of invention. May not our necessity prove

a blessing in developing for us and our posterity a better class of fruits?

COUNTY HORTICULTURAL SOCIETIES.

We are not in correspondence with or in receipt of reports from any local or county horticultural societies except the Olmsted County Horticultural Society, which was organized last March, and is prospering. I believe there are some other such societies in the State, and there ought to be more, and if abstracts of their transactions could be secured and published in our annual volume they would add to its interest and usefulness, and by complying with the requirements and provisions of the acts of the Legislature of last winter, providing for the printing and distribution of the transactions of the State society, would be entitled to receive copies of the same.

Another plan would be for the State society to assume the position of a parent society, and have auxiliary societies organized in every favorable locality, these societies to be required to hold summer meetings for exhibition and discussions, and to send delegates and full reports to each annual meeting of the State society.

After the adjournment of the last annual meeting the State Legislature passed an act to provide for the printing and distribution of our society reports. Under this act the State printer has published the history and an abstract of its proceedings from its organization, Oct. 3, 1866, to the annual meeting, inclusive, in January, 1873, in a neat and closely printed volume of two hundred and eight pages. Aside from the aid granted, we have incurred a debt of \$225 in collecting material and preparing it for the printer. In order to liquidate this debt and defray the expense of sending one or more delegates to the winter meeting of societies in adjoining States, and to procure seeds, plants, cuttings and trees for experimenting with, I recommend that we adopt a resolution of thanks to the last Legislature for the aid and encouragement they have extended to us, and memorialize the present Legislature, now in session at St. Paul, and ask them to grant us an additional annual appropriation of \$300.

Insects injurious to vegetation are rapidly on the increase, and a State entomologist is loudly called for. We can do no less than to ask the Legislature to provide for one.

Cranberry culture is awakening a lively interest in some of the States. There is no State so well adapted for it as Minnesota. Shall we encourage its growth, or let our swamps and marshes remain unsightly and unprofitable wastes. It is unnecessary to remind you of the importance of planting

shade and ornamental trees and wind-breaks. The people have aroused themselves and are inquiring what they shall plant. In conclusion, I recommend that this meeting take the necessary steps to secure for the next annual meeting a full report of the forestry of Minnesota, to include the evergreen and deciduous timber and ornamental trees that are found flourishing in the State, the places where they are found, and the soils most natural for their perfect development.

I would also recommend the appointment of a committee of three or more practical horticulturists, to co-operate with a like committee from the State Agricultural Society to revise, correct and amend the premium lists in the Horticultural department of the State Fair.

Respectfully submitted,

J. S. HARRIS, Secretary.

On motion of Col. Stevens, the report was accepted and adopted.

The report of the Committee on Varieties being called for, Mr. Jewell, (the chairman being absent), presented the following lists, but declined to make a full report, as the attention of the public had been called to many varieties he had recommended at previous meetings, some of which had failed.

FIRST LIST.

Apples for General Cultivation.

- | | |
|--------------------------|---------------------|
| 1. Duchess of Oldenburg. | 3. Wealthy. |
| 2. Tetofsky. | 4. Stewart's Sweet. |

SECOND LIST.

Apples for planting in most favorable localities.

- | | |
|------------------------------|-------------------|
| 1. Haas. | 5. St. Lawrence. |
| 2. Fameuse. | 6. Red Astrachan. |
| 3. Plumb's Cider. | 7. Saxton. |
| 4. Walbridge. | 8. Price's Sweet. |
| 9. Perry and Golden Russets. | |

On motion, the report was received.

The Secretary thought the committee should present a list of Siberians.

Mr. Jewell said he was supposed to be interested in crabs, seedlings and hybrids, and he did not think it well to introduce them personally.

Moved by Mr. Gould and seconded by Mr. Ford, that a committee of three be appointed to prepare a list of Siberian crabs and seedlings for general cultivation, to be presented this afternoon.

Carried.

The chair appointed on this committee, Thos. Moulton, P. A. Jewell and Mr. Harris.

Mr. Jewell did not feel disposed to act on this committee for reasons before stated.

The President said as they had buried the crabs at a previous meeting, and Mr. Jewell had been the first to start them, he ought now to be among the first to resurrect them.

Mr. Harris said that he had officiated at the burial, but had found that the things were prematurely buried, before dead, and would cheerfully help dig them out.

Moved and seconded that the report on apples be taken up, one variety at a time, for adoption.

Carried.

THE DUCHESS OF OLDENBURG.

Mr. Fuller In Meeker county this apple has been killed very badly, and he hardly knows of any trees of this variety now in healthy existence.

Mr. Grimes has lost no Duchess since he grafted on hardy roots.

Moved and seconded that the Duchess be adopted for general cultivation.

Dr. Humphreys asked Mr. Fuller if his trees root-killed.

Mr. Fuller said they did.

Mr. Ford stated that with him the Duchess had killed, while the Transcendent, only eight feet distant, lived, and he intended to dig up and destroy the Duchess.

Mr. Ditus Day, of Dakota county, had 20 or 30 Duchess that did not winter-kill; did not know of but one tree in his locality that had been injured.

Mr. Fuller stated that the Duchess being slow in starting may be the cause of its killing with him. In reply to question by Dr. Humphreys, he said some of his trees were planted in loam, and some in sandy soil.

Mr. Jewell (Lake City) does not consider that in his part of the State there is any danger of this variety being injured except by root-killing; had seen them top-killed in this locality and at Mankato. In the southern part of the State the Duchess is free from root and top killing, but in the northern some have top-killed. In the extreme northern part of New York they were more successful in growing apples than in the southern part of the State.

Mr. Pfeffer, of Pewaukee, Wis., said that as he came up to this meeting he stopped at Sparta, Wisconsin, and he thought that the winter had been more destructive to trees there than

in Minnesota. In the whole place there was but one bearing tree left, and that was a Duchess.

Mr. Hoffman said that on digging some Duchess that looked feeble he found that the roots they were grafted on were dead, and their life was supported simply by roots that sprouted from the scion.

Mr. Carter, of St. Peter, said a neighbor lost several Duchess, ten years, while the younger trees were not hurt. Mr. Knight's fine Red Ash are dead.

Mr. Ford, St. Paul, said he dug along the rows of Transcendents and found them good, while the Duchess near by were dead.

Mr. Stubbs, Long Lake, said in his locality there was scarcely an old Duchess that passed through the winter without injury and most of them were destroyed. He planted ten trees ten years ago that were bearing, and every one is now dead or nearly so, but he believed the trouble was from root killing.

Col. Stevens suggested mulching as the best preventive of root killing.

Mr. Morrison said that Mr. Ford had set out twenty Duchess trees for him and warranted them to be hardy, but they had all died after bearing a little. So had some green gage plum trees all killed.

Mr. Gould, Excelsior, thought this variety should be placed first on the list. Any tree that passed through last winter, with branches above the snow uninjured, had had a sufficient test. He could show any one 1,000 trees on south shore of Lake Minnetonka, seven and eight years old, in good condition for a crop of fruit next year.

Thomas Moulton, of St. Anthony, had 250 trees, four to seven years old. They stood on ground not cultivated, both sand and clay; 75 of them bore last year. Had 1,000 three years old, and those that suffered most were where the snow was from three to four feet deep. Had seen Transcendents top and bottom killed.

Mr. Hoffman said it looked very much as if two varieties of Duchess had been planted out; one died, the other lived.

The President said he had had the Duchess planted since 1861, and had never lost but one tree.

Moved by Mr. Ford and seconded by Mr. Jewell—"That 'in favorable localities' be added to the resolution to adopt."

Motion lost.

The original motion was carried, Mr. Ford voting No.

TETOFSEKY.

Mr. Ford said his experience with the large apples was that they had better be dug up and destroyed.

Moved by the Secretary that the Tetofsky be recommended for cultivation in village and city gardens. He said it was peculiarly adapted for such places, as it was hardy enough, and a small and compact tree and early bearer, but on account of its diminutive size it does not make a very good appearance where planted promiscuously in the orchard with standard apples. Thought the fruit too perishable for shipping long distances to market.

Mr. Stevens, of Minneapolis, favored the Tetofsky. He was very much attached to it, as the first apple he had raised was of this variety. Hoped the motion of Mr. Harris would not prevail, because the tree was equally valuable for the farm as the city garden.

Mr. Jewell, Lake City, said his experience with it was very much the same as with the Duchess. Had 7,000 two-year old trees, and they came out all right, as did others in his part of the State. Believed when they died it was from root killing, and if they had been mulched they would have survived.

Mr. Bowerman, of Faribault, said he did not lose any in the nursery. They were not mulched, but weeds were allowed to grow to protect them.

Mr. Fuller said he felt more favorable to this variety than the Duchess. In his experience, seventy-eight miles west, on the St. Paul and Pacific railroad, he had but few trees that were not affected in his nursery. Some tree roots, as the Haas, were all killed, while others were not much hurt, and Tetofsky looked best of all.

Mr. Grimes hoped the society would not confine Tetofsky to towns, as the country wished some. His Tetofsky had proved all right, has never had one killed back a bud; was one of four varieties that bore last year.

Mr. Howe, of Minneapolis, and Mr. Ford, of St. Paul, suggested that the society recommend what location to plant this tree in as favorable to success.

The question being called for on the Secretary's motion, it was lost, and a motion to recommend it for general cultivation was carried.

WEALTHY.

Moved and seconded that the Wealthy be recommended for general cultivation.

Mr. Peffer being called upon for his experience, said that P. M. Gideon, of Excelsior, left him some of the Wealthy to propagate; also some of the Molly, which latter is proving to be worthless. Said that they had got somewhat mixed in sending out, and that some had probably received the latter

under the name of the Wealthy, and it would certainly injure under so severe a test as the last winter, but he had been able to get the two varieties separate, and the trees had made a good growth last year, a proof that they were not much injured. The tree grew thorny but the fruit is of good flavor.

Mr. Thos. Moulton bought a lot of scions of Mr. Gideon, cut the 8th of last March, after the severe winter, and they succeeded better than crab scions cut at same time. Lost very few.

Mr. Gould, of Excelsior, said he lives 1 1-2 miles from the original tree; had examined it several times every season, and was satisfied that the tree was hardy enough for this climate. The old tree bore last year. He thought it was inclined to blight badly. It is an average grower with much vigor, more than the Duchess, and the best variety to graft into the top of other trees he knew of. Has no blight on his own, but Mr. Gideon's are badly injured, but several hundred of his two-year olds escaped last season. It made growth last year from its extreme terminal bud, evidencing its hardiness. The fruit was above medium size, and presented the best appearance of any he had seen. Its form is perfect, its color good, and is second rate in quality. Season about same as Fameuse, November and December. Owing to a mistake in labelling scions of this and the Molly—which is a worthless variety—a little confusion had arisen, but the last winter had pretty effectually used up the Molly, and those acquainted with the two could easily distinguish the true Wealthy from the other.

Question. Is it not generally considered a crab or a hybrid?

Ans. It is not.

Col. Stevens considered the Wealthy of great merit as a market apple on account of its beautiful form, color and appearance. He had five trees and they had never injured on his grounds either by blight or winter killing. It is evidently the coming apple of the Northwest.

Mr. N. J. Stubbs, Long Lake, has a very favorable opinion of it. It is the hardiest seedling in his knowledge. Some trees grown on their own roots have stood as well as any crab.

Mr. Latham, Excelsior, has observed that a large growth of this variety from a bud has passed through this winter, and grown from the tip, while other varieties considered as hardy have been more or less injured.

Mr. C. H. Clark had planted 150 yearling trees and he lost all of them, and that, too, alongside of the Duchess and Tetofsky. He observed that Gideon's own old trees were nearly used up, although the young trees looked well, and thought all varieties of trees should be renewed often in this climate.

Mr. Gould remarked that the old tree was nearly used up by blight the year before, and the present appearance of the tree is ascribable to that cause, and that probably Mr. Clark's 150 trees were the Molly.

Mr. Harris said he thought that the vitality of new varieties of trees was impaired by the excessive cutting of scions, and they were in a condition favorable to taking the blight. The condition of the old tree was a natural consequence, after being robbed of so many scions, and did not argue anything against its value. Although the facts stated in the discussion proved nothing derogatory to the planting, he would move to amend the motion by making it read "recommended for further trial. His motion was afterward withdrawn."

Mr. Ford personally had had no experience with the Wealthy, but on Mr. Slate's grounds on the St. Paul and Pacific Railroad, he found it badly diseased. Mr. Martin's, at Anoka, were also killed.

Mr. Latham—Very many trees have been sent out by mistake for Wealthy that were Molly, which is not a very hardy variety.

Mr. G. P. Pepper considers it well worthy of cultivation. Has blighted but little the past year.

Mr. Hoffman got some scions and trees that were genuine, and they are doing well.

Mr. Grimes has two trees standing on his grounds four years old, making a good growth every year and not killed.

Mr. Jewell said trees on his ground top-worked on crab have stood well and grown from the terminal buds. Has seen the variety in many places, and it shows itself to be hardy and successful. Thinks the reason it has blighted so badly at Gideon's is because there are so many blighted crabs in the same orchard.

Mr. Clark believes the Wealthy worthy of general cultivation in this State, notwithstanding his losses.

Moved and carried to recommend the Wealthy for general cultivation

Adjourned till 1½ P. M.

AFTERNOON SESSION.

The President called the meeting to order.

During the forenoon Mr. J. E. Booth, of Minneapolis, brought in and placed on exhibition in the rooms occupied by the society, some very beautiful flowering plants, which were in bloom. Among them were specimens of Chinese

Primrose, Libonia Florabunda, Zonale Geraniums, Lycopodiums Erectum, Erianthus, &c. There was also an elegant bouquet of cut flowers upon the table. Mr. Booth received many high compliments for the elegance and fine condition of his plants. He is the proprietor of the Minneapolis greenhouses on Tenth street, and also a professional landscape gardener.

Truman M. Smith, of St. Paul, had on exhibition some fine samples of grape wine and crab cider, also some jars of cider jelly. Some fine varieties of apples were on exhibition.

The Secretary presented some reports, but they were not read for want of time, it being necessary to remove to the Tribune rooms for the afternoon. They will be found under the head of Reports and Miscellaneous Papers.

Discussions resumed.

STEWART'S SWEET CALLED UP.

Mr. Stewart, the originator of the variety, being absent, a motion was made and carried to postpone the action upon this variety until more members were present who are acquainted with it, and proceed to the discussion of the list for cultivation in favorable localities.

HAAS.

The Secretary moved that this variety be placed first on the list. Seconded by Mr. Jewell.

Carried.

PLUMB'S CIDER.

Mr. Harris said he had not had much acquaintance with this variety, having no trees that had commenced bearing; but from the appearance and growth of his young trees he thought it would be safe in his (Houston) county, and would therefore move its adoption as second on the list.

The motion received a second, and Mr. Peffer spoke favorably of it for Wisconsin, and Mr. Jewell said that it was about equal in value and hardiness with the Haas.

Without further discussion, it was adopted.

FAMEUSE.

Mr. Jewell, of Lake City, gave his experience with this variety. Said that in favorable localities it would stand, and that previous to the winter of 1872 and 1873 it had stood well

enough to pay for itself many times over. We could not afford to leave out so good an apple.

Dr. Humphreys, Minneapolis, had an experience with one tree which had grown and borne fruit in 1872, but the winter of 1873 destroyed it.

Mr. Grimes, of Minneapolis, said he had cultivated it with encouraging success, and raised fruit up to season of 1872, but the winter of 1873 destroyed them, but not his confidence in the tree. He should continue to plant and grow the Fameuse whether this society recommended it or not, believing that only an exceptionally cold winter would injure them.

Mr. Clark had a limited experience with this variety. With him it stood next to Duchess and Tetofsky; could recommend it for favorable localities.

Mr. Harris, of Houston county, said he was a strong advocate for the Fameuse. Considered it the safest apple for Minnesota, that had been thoroughly tested, after the Duchess, Tetofsky and Haas. It was an early and abundant bearer, and was almost sure to live long enough to bear fruit. He had seen trees of it that were nearly dead revive and become fruitful. He was fortunate with this variety last winter; most of his trees were deep planted and not cultivated, and were not generally seriously injured. None were entirely destroyed.

By a decided vote the Fameuse was placed on the list.

The next variety under consideration was the

WALBRIDGE.

Mr. Peffer, of Pewaukee, gave his experience with it in Wisconsin. Said he knew trees twenty-five or more years old not killed last winter and bore fruit last summer. It is very valuable for its keeping qualities, and stands second to none for growth in protected localities.

Mr. Harris said his personal experience with this variety did not extend far enough back to recommend it for general cultivation under the rules we had adopted for our government in this meeting. He had about twenty trees under cultivation. Found it an easy tree to transplant, and with the exception of a single tree, it came through the last winter as well as the Duchess and better than some of the crabs. For many years he had been looking about for a late keeping apple, and his attention being called to the Walbridge he had taken every opportunity to secure information about it, and finding that it was universally doing well in Wisconsin, as far north as the latitude of Southern Minnesota, had concluded to give it a trial, and had the utmost confidence in its value for Houston county.

Mr. Jewell had been personally familiar with the Walbridge for several years. Found it generally regarded valuable. Considered it more hardy than Fameuse and second only to the Duchess. In this State his familiarity with it extended only during the last four years. He regarded it as the best late keeper yet offered to us.

Mr. Moulton set a few trees three years since. They had generally stood well.

Mr. Ford said he was satisfied to recommend it for favorable localities, and it was finally placed on the list.

THE ST. LAWRENCE

Was next taken up.

Mr. Day had fruited this variety in Dakota county the past season; considered it hardier than Fameuse or Fall Stripe.

Mr. Stubbs said he had planted a few in Hennepin county which stood pretty well until the last winter, but he had not much confidence in it for his locality.

Mr. Jewell said that while this variety was not as hardy as some, it was too valuable to throw over, it coming early into bearing, and he believed it would succeed in favorable localities.

Mr. Harris spoke in its favor, and moved to place it on the list.

The motion was carried.

PRICE'S SWEET.

Mr. Jewell would place this apple upon about the same footing as the Saxton, and thought by all means it ought to be placed on the list.

On motion to that effect, it was placed upon the list.

RED ASTRACHAN.

The Secretary moved to place this variety on the list to recommend for general cultivation.

Mr. Grimes dissented from this idea, in that his experience placed it inferior in hardiness even to the Fameuse.

Gen. Nutting, of Faribault, objected to placing it on the list for general cultivation. Even if hardy its season was near the same as the Duchess, and it was so slow coming into bearing, and bore so little, that it was an unprofitable investment.

On putting the motion it was voted down, and a motion to place it on the dead list was carried, with but two opposing votes.

SAXTON OR FALL STRIPE.

Mr. Stevens highly recommended this variety for hardiness as having in his own experience rewarded the labor bestowed on them by producing bountiful crops of fruit while very young. On his grounds it passed the winter of 1873, and bore well the past season.

Mr. Latham, in his experience and observation, took issue with Mr. Stevens, reporting several instances on Lake Minnetonka, where the Saxton had proved a failure.

Messrs. Brand and Nutting, of Faribault, and several others were in favor of placing it on the list, not so much for its perfect hardiness, but because wherever planted we are pretty certain to enjoy its fruits.

On motion of Mr. Harris, it was placed on the list.

PERRY RUSSET

Was next discussed and objected to on account of the long time before it comes into bearing, and on motion of Mr. Ford it was placed on the dead list.

GOLDEN RUSSET.

This variety was taken up, and after a brief discussion, placed on the dead list.

PEWAUKEE.

Mr. Jewell moved to place this variety on the list for favorable localities.

Mr. Pepper, of Wisconsin, who originated this variety, rather modestly spoke highly of this variety. Said it was a seedling of the Duchess of Oldenburg, a good keeper, and of fair quality; fruit nearly size of Duchess.

Mr. Gould, of Excelsior, had not had experience with this tree beyond the past three years, and in his nursery, out of some 250 trees, about three-fourths stood the severe winter of 1873. He thought favorably of the tree for protected localities.

Mr. Stubbs, of Long Lake, had about the same experience as Mr. Gould. Prior to the last year's experience the tree killed back some each winter, and finally to the ground in 1873, but believed his trial was not a fair test, he having forced the growth by excessive cultivation, getting a growth of three or four feet each year.

Mr. Grimes said he had some experience with ten trees of

this variety for three years, and regretted that his opinion must be recorded against its hardiness, though he should not discard it without another trial.

Mr. Jewell said his experience was somewhat similar to those gentlemen who preceded him.

Upon a vote being taken, this variety was finally placed on the dead list.

STEWART'S SWEET.

Amasa Stewart, the originator of this valuable variety, being present, it was again taken up. He stated that it was a fall apple, that it originated from seed some fourteen years since, and it had proved hardy with him through all winters past: bore fruit in Blue Earth, Le Sueur and Hennepin counties, and did not know of any trees having been killed by winter.

Mr. Stubbs said he was acquainted with the tree, and he fully corroborated what Mr. Stewart had said.

Also Mr. Hoffman said the same.

Mr. Gould considered it a better variety than almost any other sweet apple, and hardier than even the Duchess.

Mr. Clark, Hennepin county, had cultivated Stewart's Sweet the past four years, and would bear testimony to its perfect hardiness. The tree is beautiful growth, and second to no sweet apple in quality.

Mr. Ford's testimony sustained that previously given.

On motion, it was placed on the list for general cultivation.

The apple list being finished, it was moved that the committee on Siberians be called upon to report.

Carried.

SIBERIAN APPLES OR CRABS.

Mr. Jewell, for the committee appointed to prepare and present a list of Siberian crabs and their hybrids for general cultivation in the State of Minnesota, said: "Our committee submit for your consideration the following list of Siberian apples arranged in four classes:"

First Class.

Early Strawberry,
Orange,

Beecher's Sweet,
Minnesota.

Second Class.

Conical,
Quaker Beauty,

Malden's Blush,
Hutchinson's Sweet,
Meader's Winter.

Third Class.

General Grant, Hesper Blush.
Aiken's Striped Winter.

Fourth Class.

Aiken's Green Winter, Transcendent,
Hyslop.

A motion was made to receive the report.

Carried.

The list was taken up and discussed, one variety at a time, and finally adopted as reported, with the exception of the Hyslop, which was voted unworthy of general cultivation.

Mr. Jewell has given us the following report and description of them since the adjournment of the meeting:

The committee of the Horticultural Society arranged the Siberian apples in four classes—the first three with respect to hardiness and the fourth with reference to their special adaptation to cooking.

FIRST-CLASS - IRON-CLAD.

Early Strawberry—Tree a strong and handsome grower, bearing heavy crops alternate years.

Fruit, size and appearance of Transcendent, excellent for eating. Season, August.

2d. Orange—Tree a moderate grower and an annual and abundant bearer. Fruit larger than Transcendent, flesh firm, crisp, juicy and delicious. October to December.

3d. Beecher's Sweet—Tree vigorous and erect, a biennial and abundant bearer, fruit resembling in appearance the Transcendent, but larger, very pleasant for eating. September.

4th. Minnesota—A medium grower, with pale green leaves of unusual size, often becoming highly colored in autumn like the foliage of the sugar maple. Fruit larger than the Golden Russet, skin thin, nearly white, with beautiful blush on the sunny side. Quality excellent. December to February.

CLASS SECOND—EXTRA HARDY.

1. *Conical*—Tree vigorous and handsome, and a good bearer. Fruit is large as Transcendent, mellow, dry, and with a peculiar spicy flavor. In appearance and flavor resembling the Black Gilliflower. October.

2. *Maiden's Blush*—Tree medium grower, of slender, graceful habit. Fruit not quite as large as Transcendent, of pearl

white color, with a beautiful red cheek, flesh tender, fine grained, with a peculiar pleasant flavor. December to January.

3. *Meador's Winter*—A handsome, strong growing productive tree. Fruit size of the last; excellent for eating. Season April and May.

4. *Hutchinson's Sweet*—Tree a good grower, with slender twigs; a moderate bearer. Fruit size of the last described; superior quality, keeping until April or May.

5. *Quaker Beauty*—A stronger grower than the Transcendent; a biennial bearer. Fruit large, handsome and of excellent quality. April to May.

CLASS THIRD—HARDY.

1. *Gen. Grant*—A vigorous, erect and symmetrical tree; an annual and profuse bearer, fruiting in dense clusters. Fruit very large, dark red, nearly black when ripe, and in quality much like the Duchess. October and November.

2. *Hesper Blush*—Tree among the handsomest, and a good bearer. Fruit a little smaller than the Gen. Grant; smooth, handsome, quality good. Season, November to January.

3. *Aiken's Striped Winter*—A fine tree, but the least hardy of the class; an annual and free bearer. Fruit good sized and valuable for either eating or cooking. Season, mid-winter.

Class Four, except Green Winter, are too well known to need description. They are suitable for cooking and drying only.

A few additional facts in regard to these Siberian varieties may not be without interest. The first class is slightly more hardy than the second, but both are regarded as sufficiently so to warrant general planting. The third class is less hardy than the two preceding, but will probably succeed in all but the most trying situations.

None of them are as orchard trees like the Transcendent badly given to blighting, except Meador's Winter and Gen. Grant.

In fruitfulness the several varieties differ greatly, but in the aggregate fruit younger and more profusely than the common kinds of apples.

For eating none are inferior to the Duchess, while several kinds are equal in this respect to any apple grown.

As a harvest fruit the Early Strawberry is more valuable than the Tetofsky, the fruit being as good in quality, and the tree more vigorous and hardy, and adapted to all kinds of soils.

The Orange is unquestionably more valuable for general

cultivation than the Duchess of Oldenburg. The tree is even more hardy, not less productive, the fruit less perishable, lasting several months, and perfectly adapted to every use to which an apple can be applied—eating, cooking or the manufacture of cider.

As an early winter apple there are none of the common sorts, that have come to public notice, that in hardness of tree, size, quality and beauty of fruit, are equal to the Minnesota, the largest of Siberian seedlings.

The only unsettled question on which the value of this variety measurably depends, is its productiveness.

P. A. JEWELL.

PEARS.

The next topic announced was Pears.

Mr. Fuller inquired if any member knew of any variety of pears, of bearing age, that endured last winter in this State. Said he did not like to give up the idea that they could be produced in Minnesota.

Mr. Harris said that he lost all of his, about fifty trees, of about ten varieties, but chiefly Flemish Beauty. Had heard of some trees in Houston county reported all right, but had examined them and they were no better than dead. Did not think it expedient for us to say much about raising pears.

A motion was made and carried to pass over this subject without recommending any variety.

PLUMS.

All varieties of tame plums have thus far been a failure in this State, never living to pay the first cost of the trees.

Moved by Mr. Ford, of St. Paul, and seconded by Mr. Harris, that we recommend for general cultivation only the best varieties known as native, or belonging to the wild order.

Carried.

CHERRIES.

Mr. Myers, of St. Peter, said he was cultivating a variety of cherry that he brought over from Germany, which with him and wherever tried had proved hardy, prolific and desirable. They are known as the Hartz Mountain cherry.

Col. Stevens said he had seen the cherries, and thought they were very valuable.

The President, T. M. Smith, said he considered this variety one of the best cherries he ever saw. He had on his place

several other varieties, but the only other one of them that bore fruit was the Early Richmond grafted on the Black English Morella.

Mr. Carter, of St. Peter, is familiar with this cherry. Does not think that too much has been said in its praise. It is valuable, hardy, and a great acquisition to the fruits of Minnesota.

This variety of cherry was endorsed and recommended for cultivation.

Mr. Ford wanted to know if any one had trees under cultivation of the Lieb cherry.

Mr. Grimes had them, but could not speak understandingly of the merit of the fruit because the plants were too young.

Mr. Ford had heard considerable in its favor, and moved that the society recommend the Lieb cherry for trial.

The motion was agreed to.

Mr. Truman M. Smith said he had been successful with the Early Richmond cherry grafted on Morella stock, and moved that it be recommended for trial.

Carried.

GRAPES.

Mr. Ford moved that the list adopted last year be reindorsed by the society.

Carried.

(The varieties recommended at the last year's session were Concord and Delaware.)

Mr. Ford then suggested that the President (who has had an extensive experience in grape culture) recommend an addition to the list of three varieties for family use and three varieties for general cultivation.

This suggestion meeting with favor, the President was appointed a committee of one to prepare such lists and report in the evening.

Meeting adjourned until 7 P. M.

EVENING SESSION.

Meeting called to order by the President. Vice President Dartt then took the chair, while the President made the following report :

GENTLEMEN—For one individual to select a list of three or six varieties of grapes from the scores of candidates to be found in catalogues, and with even a greater variety of tastes to please, is a difficult undertaking.

But I have considered the merits of the following, and submit them for your consideration :

1st List.—For Amateurs.

1. Croton. 2. Rogers' No. 4. 3. Rogers' No 15.

2d List.—For General Planting.

1. Creveling. 2. Martha. 3. Salem.

Report was received and adopted.

The Secretary read the following report from A. C. Hamilton :

CHICAGO, ILL., Jan. 19th, 1874.

To Minnesota Horticultural Society, at Minneapolis :

DEAR FRIENDS IN THE CAUSE :—I am very sorry I cannot be with you at your annual meeting, but I venture a word by way of writing you. I presume you will have one of the most interesting meetings we have ever had, for it being at Minneapolis, the *Banner City* of Minnesota, with all its hospitality, and with a people who are always in sympathy with horticultural and agricultural meetings, and for any real reform which is for the general good of Minnesota, I will say then I am heartily sorry I cannot be with you.

I will venture one thought, which will be wholly upon the subject of how trees should be set in Minnesota. The last winter has shown us that many of our trees have been killed, and even some of the most hardy ones. Many causes have been given. I will tell you my reason, and then tell my way of avoiding any future trouble from same cause. The trees were killed by extreme freezing in the early part of winter, and by the dry soil; not enough moisture to sustain the roots. I know a whole orchard garden that was saved in this way. Last August a year ago the man who owned the place raised his house about 15 to 20 inches higher than it had been. When this was done his grounds were not high enough, so he filled in the orchard so as to make it about the same in proportion to the house. The consequence was his trees were 15 to 20 inches lower down, so he filled up to the same proportion as he had raised the house. All were in good condition and made good growth—even a nice Flemish Beauty pear—while ten feet from there, almost everything was killed. Now the conclusion is, in my mind, that we had better set trees much deeper in the ground, so they will get more moisture, which the tree always needs. I hope this will be discussed freely. One more instance. I know a tree which stood near the back kitchen, down where all the slops from all the wash days had been thrown out all winter around the tree, and in spring the ice was more than 12 inches thick about it. This tree lived and fruited well, while the rest in garden nearly all died. This seems to be true, moisture is very much needed.

Minnesota has no winter rains to feed the trees upon. The tree needs this even in winter, or a certain moisture on the roots kept up. Chicago has rains, and I know it, for I saw some yesterday. Was any one ever in Chicago and not see it rain? But I see the trees look nice.

I will not use any more of your time. Hoping you will have one of the best meetings you have ever had, I am

Yours, very respectfully,

A. C. HAMILTON.

Moved that the report be received and placed on file to be embodied in the Transactions.

Carried.

CURRANTS

Were next in order.

Moved, that we recommend Red Dutch, White Dutch, White Grape and Victoria.

Passed without discussion.

GOOSEBERRIES.

Mr. Jewell moved to recommend Houghton's Seedling and Pale Red, for general cultivation.

The motion to recommend was lost.

BLACKBERRIES.

Mr. Loring said there is a blackberry growing on his place, without covering or protection, that does not winter-kill, called the Banton Seedling, from Vermont. It bore heavy last year.

Mr. Truman M. Smith said they were hardy, stout and good.

Col. Stevens said it is well known that they are hardy.

Mr. Brand moved, that we have no blackberries known to do sufficiently well here to recommend for cultivation.

Adopted.

STRAWBERRIES.

The Wilson's Albany was adopted for general cultivation.

Mr. Grimes moved that the Green Prolific be recommended for amateur cultivation as an abundant bearer.

Carried.

Mr. Harris said the Downer's Prolific was a good berry, and abundant bearer, and moved that it be recommended for general cultivation.

Adopted.

Charles Downing was spoken of as doing well on sandy soil; very vigorous grower, a little later in the season.

The Michigan Seedling and Charles Downing were recommended for trial.

WEALTHY APPLE.

Mr. Carter, of St. Peter, said he had voted to place the Wealthy apple on the list for general cultivation.

He would now move to reconsider the vote. The motion received a second and was carried.

Mr. Harris moved that the Wealthy apple be recommended for trial.

Mr. Dart, of Owatonna, said his theory was to oppose recommending anything unless it was established that it had a permanent value.

He did not think this variety had been tested in many parts of the State. He knew the location of Mr. Gideon, of Excelsior, was a favorable one, more so than with him at Owatonna; as many failed as of the Ben Davis. He had a seedling which was a good winter fruit, and stood as well as the Wealthy. Thought it would come out about the same.

The Wealthy was taken from the first list and left for trial.

Mr. Dartt moved to place the Stewart's Sweet in the same list.

Motion lost.

The following resolution of the Kansas State Horticultural Society was read by the Secretary :

WHEREAS, The "American Pomological Society" is composed largely of men residing in the States east of the Mississippi Valley, consequently its meetings are generally held in some one of the Middle or Eastern States; its fruit lists are made up of varieties generally successful in said States, most of which are not adapted to the Western sections; and, believing that a co-operation of those States lying west of the Alleghany mountains, whose interests and experiments are allied, would result in great and important advantages to those concerned, therefore be it

Resolved, That the time, in our opinion, has fully come, and demands the organization of a "Western Pomological Congress," to be composed of the States above indicated. That the Secretary of our society be requested to correspond with the Secretaries of the various State Horticultural and Pomological Societies, with a view to effect such an organization.

Col. Stevens moved that the communication be accepted and referred to a committee of three, consisting of Messrs. Harris, Dartt and Nutting, with P. A. Jewell as alternate.

Carried.

Adjourned till 9 A. M. to-morrow.

THIRD DAY.

The President called the meeting to order, and the Secretary read the following communication from Bates & Northup, of Stockton, Winona county :

The year 1878 was quite a disastrous one to the horticulturists of our young State. We, with the rest, can say we saw many of our brightest hopes dashed away, but nevertheless we are not discouraged, but intend

to still keep trying until we help demonstrate the fact, "We do raise fruit," the croakers to the contrary notwithstanding. We find that all kinds of our hardy apples suffered equally. They seem to root-kill, the cause we charge to lack of moisture in the soil, as in some instances in low moist spots the trees suffered very little. We lost some Duchess, Haas and Fameuse in nursery row, while in orchard they stood well. Two-year-old trees suffered the least. Our grapes suffered with other fruits; still Concord and Delaware are our favorites. We think they hurt before winter set in by early freezing. We look for good results in the hybridization of the apple by the crab, and think we can add to our hardy list by this method. Our trial of the Wealthy proves it to be very hardy; we never lost one tree of it. We have a seedling of the Yellow Bellflower, which we found growing on the farm of Mr. Burns, of this county, which has the appearance of being a cross of the Bellflower and the Yellow Siberian, the fruit being of the Bellflower type and the tree of the Siberian family. The original tree stood last winter and bore two and a half bushels of nice fruit the last summer. The few trees we had in our nursery row were not injured. We had specimens of the fruit saved, but unfortunately they got frozen, so we cannot present it as intended. We call it the Burns' Winter, as it is a good winter keeper, and shall at some future time present it to you for examination.

Accepted and ordered to be filed with the Transactions of this meeting.

A report was also read from E. P. Evans, Brownsville, Houston county, for the counties of Houston, Minn., and Vernon, Wisconsin. (See Reports and Miscellaneous Papers.)

PRESIDENT'S ADDRESS.

Gentlemen of the Minnesota State Horticultural Society:

The constitution of our society makes it my duty to deliver an annual address, but, fortunately, does not prescribe the length, breadth and depth of such an address, consequently I shall endeavor to make it as short as possible, knowing that brevity will be its chief ornament. Since we last met in council, one year ago, there have been many and great changes in regard to hardy fruits in the State of Minnesota, or the entire Northwest, and even extending over New England and the whole northern limit of fruit culture, and I apprehend that but few in this or any other society would to-day advocate as iron-clad or even hardy, what was considered one year ago as hardy as the oaks, or nearly so. The losses of 1872 and 1873 will long be remembered in Minnesota. But as heavy and severe as our losses were to individuals, myself not excepted, I firmly believe they will, in the end, prove a great blessing and save millions of dollars to our State in the future; for had it not have been for last winter's severity and losses coming just as we thought we had a list of trees capable of withstand-

ing the rigors of our cold and dry climate, there would have been, this and the next season, millions of tender and half hardy trees, sold and spread broadcast over the length and breadth of our State, only to bring ruin and sorrow, instead of fruit, to the purchasers and planters.

Now, with last winter's experience and loss, all hope of fruit-growing is not gone; on the contrary, my faith in being yet able to not only raise a good and sufficient supply of apples has been strengthened, but I think the matter has become a certainty that there are varieties, and more will be found, that will stand and bear fruit even in our cold and dry climate; and that the rigors of last winter only blew off the chaff, so to speak, and saves us the wheat, and it also settles in my mind another problem which I have long contended for, viz.: to have perfectly hardy trees we must in every case graft or bud upon perfectly hardy stocks only, and in this I think lies more of the secret of success than many will admit. That the cause of the wide-spread ruin of the past winter was not due to the extreme cold many are willing to admit, but attribute it to some peculiarity of soil, climate or air, of which all disagree, or at least are not able to agree upon any one theory that can be satisfactorily explained, some claiming that the injury was done in spring or mid-winter, or in warm spells by the roots being too warm, or by the sap running by day and freezing by night, thus searing the cells and killing the trees. Others contend that the ground froze too deeply around the roots and stopped all circulation of sap in the roots, and thus killed the trees. My own views are that the hard freeze of November came so suddenly that the sap had not all returned to the roots, and the trees were not in as ripe a state as they should be for severe weather. But in support of this I will say that my Minor plums, which ripened up their wood very early in the fall of 1872, stood the last severe winter much better than the two preceding winters of 1871-2.

ENTOMOLOGY.

I shall not attempt to dictate any course of action or rules of business, but must be permitted to call your attention to several things which I deem worthy of consideration by your honorable body, and among the first of these is the importance of this society and the State Agricultural Society urging upon the State Legislature the appointment and providing for the payment of a State Entomologist. All would be astonished at the loss sustained to our young and growing State from insects alone. I have no doubt that our loss from this source alone is more than three times the amount of our State taxes. That

the whole of this vast amount would be saved is not expected, but on the other hand, might we not expect, and with confidence, that a good and competent entomologist who could spend his time in studying our insects and the best methods of exterminating them and disseminating such knowledge, could save many times his salary in each year? Take for instance the potato bug, and how many hundreds of thousands of dollars' damage, if not millions, to our State has been done by this pest, and as entomology is a science, no man expects to make money out of it by his services unless in some way paid by the public. It is but just that he should be paid by the State, and the people of the State all receive the benefit.

CRANBERRY CULTURE.

Again I would call your attention to the subject of Cranberry culture, as one of vast importance to our State. Believing that we have many thousands of acres well situated for the cultivation of this, may I say, the best of all small fruits, I will say, without fear of contradiction, the most important of all small fruits, in a financial point of view. When we consider the fruit, when well ripened and perfectly handled, can be kept in its fresh state the year round, or longer, without canning or other expense; and again, if properly packed, it bears shipment to distant markets better than any other, and can be made to yield our State a large and steady income, as an article of export to distant markets. Even our wild fruit, picked from our marshes in their native state, has heretofore brought no small amounts of money to our State. This fruit improves by cultivation, and here as much as any other, if not more than most States. No one who saw the fine specimens of cultivated berries at our State Fair would really wish to produce the half-ripe and small wild fruit offered at our stores alongside of those cultivated.

VEGETABLE GARDENS.

Again permit me to call your attention to our vegetable gardens, which hitherto have received only neglect or a passing notice at your hands. This branch of horticulture is a very important one, and I hope will, as it deserves, receive your careful attention. The flowers, of course, will not be overlooked, as they are in constant demand from the cradle to the grave. Another item suggests itself to my mind, and that is the importance of

HORTICULTURE AS AN ART,

and our duty in bringing it before the rising generation in our schools, academies and universities. It was the first art ever taught man. God himself, in His infinite wisdom, planted the first garden, and from that day to this it has been man's greatest and best blessing on this earth, and consequently should stand at the head of all other arts and sciences. The too common idea that to be a good gardener or horticulturist requires but little education and less brains, is a sentiment only fit for the dark ages, and is only entertained by those who know nothing of its first principles, as is also the idea that it is not an honorable or lucrative pursuit. Is not the name of Marshall P. Wilder known and honored as far and wide as that of U. S. Grant? Are not the names of Downing, Kincutt, Hooper, Wilson, Barry, Vick, Ellwanger, and hosts of others, household words among the enlightened and intelligent of this and other lands? and have not Hendersen, Paly, Ellwanger and Barry, Hoveys, Vick, Briggs and many others, demonstrated that horticulture, with capital and intelligence to guide and manage its affairs, can be made profitable? What trade or profession can we find that will run itself without brains or capital, and make a fortune for the men who pursue it? With knowledge, labor is capital. Again, what trade or profession offers as many inducements at the present time for young men and ladies as horticulture? I mean for men of intellect and energy. All other trades and professions are full to overflowing. But can there be found a supply of competent gardeners, fruit-growers or florists? and where is there a town or city among the inhabitants of the civilized portion of the globe, but what there is a demand for all the products of the horticulturist? His fruits, vegetables and flowers not only grace the table of kings, presidents, and nobility of the land, but the poor and the middle classes. Each and all come in for their share, and no highly civilized or enlightened community will be without them in abundance. They form a large part of the imports and exports of our commerce, and of the commerce and trade of all the civilized world. Now, this suggests another idea to me that, in view of the importance of our calling and profession, shall we always stand in the background and play "second fiddle," as the saying is, to horse-racing and herdsman? I say not, and that horticulture is as far ahead of those callings as the enlightened countries on the globe, where horticulture flourishes, are ahead of the Arabs and the half-civilized tribes of Mexico and South America, where horse and cattle-raising form the chief occupation. Now, cannot we under our new constitution and our

acts of incorporation, within the next two or three years, raise funds enough to purchase a lot or lots, and erect a fine building, and have a house and a hall for our meetings, and a place to hold our fairs and exhibitions, and have our fruit and flower shows at least twice in each year, and have our place for a distributing point of seeds, plants and horticultural implements. Look at the horticultural halls in Boston and Philadelphia. Are they not the pride of those cities? And does horticulture go a begging in Massachusetts, with her society worth over \$2,000,000, and numbering among its members some of the best educated and noblest minds of that Commonwealth? I tell you, members of the Minnesota Horticultural Society, if you would have your society and your calling respected and exalted in the minds of others, you must respect and exalt it yourselves, with your hands, minds, and purses if necessary.

A vote of thanks was tendered, and a committee appointed to report in the afternoon upon its very striking suggestions.

Messrs. Moulton, Nutting and Jewell were the committee.

A communication from Peter M. Gideon, of Excelsior, was read. It was relative to the rejection from the horticultural report of his address on the "fast horse," and the toleration of horse-racing at State Fairs to the detriment of more interesting and worthy objects.

Moved that it be accepted and placed on file for future reference.

Moved that the reports of each day's proceedings be read and corrected the following morning.

Mr. Ford stated that his reasons for wishing this motion to pass was that last year the reports had made it appear that he had said entirely contrary to his views, and in that shape they had found their way into the volume of Transactions.

Motion carried.

The Secretary requested all members whose remarks were wrongly reported to notify him of the fact before the proceedings are compiled for publication.

Considerable discussion followed on the recent horticultural reports printed, and C. H. Clark moved, and was seconded by Mr. Harris, that we pass the following vote of thanks:

Resolved, That the thanks of this society are due, and are hereby heartily extended to the committee who have so laboriously, and from the scattered condition of the material, effected so satisfactory a compilation of our Transactions as appears in our first published volume.

Passed.

Moved by Mr. Jewell and seconded by Mr. Clark, that a committee be appointed by the chair for drafting rules and by-laws for the use of this society.

Messrs. Jewell, Dartt and Clark were appointed as such committee, and were instructed to report in the afternoon.

The meeting then adjourned till afternoon.

AFTERNOON SESSION.

The committee to whom was referred the circular from the Kansas Horticultural Society submitted the following report :

We have carefully considered the resolution therein embodied, and the preamble to the same. It is true that in the past the American Pomological Society has been largely composed of men residing east of the Mississippi Valley, and its meetings have been held chiefly in the Eastern and Middle States; nevertheless, as its name implies, it is an American institution, and includes in its membership the best and most experienced men of the land. The doors are open to all, and the hand of welcome is extended to us of the Northwest. If we do not get an equal benefit in the places of meeting and the making up of fruit lists it is our own fault. Therefore, in our opinion, it would not be expedient to favor the organization of a Northwestern Pomological Congress, and that the Secretary of this society be instructed to reply to all official correspondence upon the subject, in accordance with this report.

J. S. HARRIS,
L. NUTTING,
P. A. JEWELL.

The report was accepted and adopted.

ELECTION OF OFFICERS.

The society then proceeded to the election of officers, and elected for President, Truman M. Smith, Esq., St. Paul.

The Vice Presidents being elected from members of each Congressional District, the election by ballot was suspended, and Messrs. E. H. S. Dartt, of Owatonna, for First District; Gen. Levi Nutting, of Faribault, Second District; and G. W. Fuller, of Litchfield, Third District, were elected Vice Presidents.

L. M. Ford, St. Paul, was elected Secretary; Amasa Stewart, Minneapolis, Treasurer; and Messrs. J. S. Harris, J. C. Fleischer, of St. Paul; P. A. Jewell, Lake City; O. F. Brand, Faribault, and J. T. Grimes, of Minneapolis, for Executive Committee, the President and Secretary elect being members *ex officio*.

The President, Col. J. H. Stevens, and Messrs. Gould, Moulton and Jewell were appointed delegates to the State

Agricultural Society, which meets in St. Paul in February next.

Moved that \$15 be paid the ex-Secretary for stationery and postage for the last year.

Carried.

Col. Stevens' bill of \$47 for copies of the Farmers' Union of last year, containing horticultural reports, and for compiling the said reports for publication, was ordered to be paid.

Moved that the subject of regulating the premium list of the State Fair be left with the Executive Committee.

Carried.

Moved that the name of O. F. Brand be added to the Committee on By-laws, and report in the evening.

Col. Stevens offered the following resolution :

Resolved, That the retiring Secretary, J. S. Harris, be empowered to prepare the proceedings of this meeting for publication and present them to the printer.

The committee on the President's address presented the following resolution :

Resolved, That we recommend that the able address of our worthy President be accepted and put on file, and that the numerous topics suggested by it be carefully considered.

That a committee of five be appointed by the President, whose duty shall be to solicit subscriptions of the citizens of Minneapolis and St. Paul for the purpose of purchasing property in one of these places to be used as the headquarters and permanent place of business of the State Horticultural Society.

Accepted and adopted.

The President appointed as such committee Messrs. C. M. Loring, Geo. A. Brackett and Wyman Elliott for Minneapolis, and Messrs. Truman M. Smith, J. H. Stewart and E. F. Drake for St. Paul, the President's name having been added, on motion.

The Secretary stated that there was a premium of \$25 at the last State Fair for the best and most instructive report of viewing committee in the horticultural department, the award to be made by the State Horticultural Society, and that a very able report had been handed in to compete for the premium.

The reports being quite lengthy, it was moved that a committee of three be appointed to examine them and award the premium offered, and ascertain if there is anything in such report worthy of being incorporated in the Transactions of this society.

Dr. O. M. Humphreys and Messrs. Ford and Carter were appointed on the committee.

Moved, that a committee of three be appointed to visit the State University and report to the society at its regular annual meeting next year what progress had been made in the horticultural department of that institution.

Messrs. G. W. Fuller, J. S. Harris and C. M. Loring were appointed as such committee.

This business having been disposed of, a motion was made to adopt the list of annual flowers recommended last year with the addition of the Morning Glory.

Considerable feeling was shown in the discussion of this motion, and a substitute for the motion was adopted as follows:

That a committee of three be appointed to present a list of annuals, hardy herbaceous plants, hardy shrubs, tender or half hardy shrubs, hardy and tender bulbs, and bedding plants.

Committee to report this evening.

W. Cannon and Messrs. Fleischer and Ford were appointed such committee.

Mr. Harris was added to the committee.

The society next proceeded to the discussion of

SHADE TREES.

On motion of Mr. Ford, it was changed to shade trees for streets and lawns.

The list of such trees recommended last year was adopted.

The list is as follows: White Elm, Basswood or Linden, White Ash, Box Elder or Ash Leaf Maple, Soft Maple, Rock Maple, Butternut, Black Walnut and Hackberry.

ORNAMENTAL TREES.

Moved, that the list of last year be adopted.

Carried.

Moved, that the European Larch and Kentucky Coffee Tree be added.

Carried.

The list recommended is as follows:

Mountain Ash, White Birch, European Larch and Kentucky Coffee Tree.

EVERGREENS.

Moved, that the list received last year be adopted.

Carried.

Mr. Ford said that the Norway Spruce stood at the head of the list; that it was not as hardy or good a tree as the White

Spruce, and he would move to reverse their position and place the White Spruce first on the list.

The motion received a second, and a very interesting discussion followed.

Mr. Charles Hoag thought it judicious in arranging the different varieties of the list to be recommended, that care should be taken as to what kinds were placed first, that people might not be deceived in making their selections.

Mr. Clark expressed himself warmly in favor of the hardness of the White Spruce, as being worthy of a first place in the list, in preference to the Norway Spruce, which was materially affected by severe winters. He referred to several fine Minneapolis gardens for specimens of the White Spruce, and intimated that nurserymen had so far entirely manipulated and controlled the action of this meeting in its recommendations as to confine their lists to stock they had to sell, and that amateurs, whose sole interest was to beautify and adorn, were not considered or consulted as to their opinion.

Mr. Jewell said that the Norway Spruce, each succeeding year, became more handsome, while the Balsam, as it advances in years, is liable to become imperfect, losing its lower limbs. The value of evergreens depends on this fact of increasing in beauty as they grow older, and tried by this test the Norway is a very valuable tree.

Col. Stevens said that at one time he purchased five Norway Spruce. After planting them out in early spring he was absent from home for a while. Upon his return he found the trees had shed their leaves *a la mode* deciduous style. Not knowing that an evergreen ever shed its leaves, he concluded that the trees were dead. He pulled up four of them and cast them over the fence. He tried to get up the fifth, but that was planted so deep that it resisted his efforts. Judge of his surprise afterwards when he found that the remaining tree had put forth a new foliage, and to-day his Norway was one of the most beautiful trees in his grounds. So much for Mr. Ford's idea that the Norway was not hardy.

Mr. Carter would vote for the Norway, as his experience with it warranted him in doing so.

The motion to place the White Spruce at the head of the list, instead of the Black Spruce, was lost, Mr. Ford voting for it.

The list of Evergreens, as adopted, stands:

1. Norway Spruce. 2. Austrian Pine. 3. Scotch Pine.
4. Balsam Fir. 5. American Arborvitæ. 6. American Black Spruce. 7. White Spruce. 8. Red Cedar, (when clipped.)
9. Siberian Arborvitæ, for small yards.

The following resolution was then presented by Mr. Harris, and adopted :

Resolved, That all ladies residing in Minnesota, Wisconsin, or Iowa, who own or manage greenhouses, flower gardens or conservatories, without the aid of professional florists, and who shall forward their names to the Secretary, and donate an essay or paper on floriculture, in some one or more of its branches, shall be elected members of this society, and be entitled to reports of its Transactions, and all other privileges conferred upon members by the constitution.

The President said it was his object to give the ladies a prominent position in the society, as they deserved. He knew a lady that owned and managed a greenhouse herself and made it a success.

Mr. Peffer said the ladies of Wisconsin took a share in the proceedings of their society and furnished valuable essays and suggestions in horticulture.

Adjourned till evening.

EVENING SESSION.

President Smith in the chair.

The 21st topic in the order of business was taken up.

WHAT SOILS ARE BEST ADAPTED TO THE VARIOUS KINDS OF FRUIT, AND WHAT MANURES PROMOTE THE MOST HEALTHY GROWTH ?

Mr. Dartt, of Owatonna, opened the discussion by saying that he thought sandy loam with clay sub-soil, and good natural drainage, was the best for apple trees. He did not think the aspect of so much importance as the soil ; although in Wisconsin a northern exposure is thought to be preferable.

Mr. Harris said he endorsed what Mr. Dartt had said. He did not think the soil of Minnesota needed very heavy manuring. Our trees generally grow too fast and too late in the fall, but if the soil is too poor to give a fair, healthy growth, he thought barn-yard manure applied on the surface, just as winter sets in, the best fertilizer.

Mr. Fuller thought that good care and attention was of more importance than soil. Thought the ground generally selected not rich enough, especially for small fruits. Raspberries require deep, rich soil, to perfect large crops of good fruit, and the same is true of Currants. Strawberries do well on new land—sandy loam, without manure.

Mr. Stewart wanted high ground for an orchard, with plenty of clay, and not too rich.

The President thought a northern slope with clay soil, and not rich, the best adapted to apple trees.

Mr. Dartt considered that barnyard manure with ashes is best for fruit trees, but would not manure land that is rich enough to bring a good crop of corn. On soil too rich he would throw aside the sub-soil from the holes and fill in rubbish or surface soil around the tree.

Mr. Jewell did not want manure for most varieties of apple trees, but for such trees as the Duchess and Tetofsky, which are of slow growth, manure would be of benefit; but for vigorous growing trees it is no benefit.

Mr. Peffer said that the soil should be well pulverized, and the ground should not be enriched to make a large growth. Trees should not be grown too fast in the nursery rows.

Mr. Clark thought that nurserymen prune their trees too much. His land is black sandy soil, with clay sub-soil. His theory was for cultivating in spring and mulching in June.

Mr. Jewell, as chairman of the committee on by-laws, presented the following code, which was adopted clause by clause:

BY-LAWS.

DUTIES OF OFFICERS.

1. It shall be the duty of the President to preside at all meetings of the society when present, and to deliver an address at the annual meeting of the same. In the absence of the President one of the Vice Presidents shall preside in his place.

2. The Secretary shall record all the doings of the society, collate and prepare all communications, &c., for the public press, and pay over all money received from members or otherwise to the Treasurer, on his receipt; shall receive and answer all communications addressed to the society; establish and maintain correspondence with all local, county, district and State Horticultural Societies, and secure, by exchange, their Transactions as far as possible; to aid the President, as an executive officer, in the dispatch of business relating to meetings of the society, and notices of horticultural and similar meetings of general interest, and report to the annual meeting of the society an abstract of the matter that has come into his possession, which shall become part of the Transactions for the current year, and shall be prepared by him for the public printer.

3. The Treasurer shall collect and hold all funds of the society, and pay out the same only on the order of the Secretary, countersigned by the President.

4. An Executive Committee of five shall be chosen annually, who shall, in connection with the President and Secretary (who shall be members *ex officio*), have in charge all matters pertaining to the interests of the society; shall revise all matter coming into the hands of the Secretary, and pass upon the same its approval before its submission to the annual meeting.

5. The Executive Committee may call a meeting of the society at any time and place they may deem advisable and for the interests of the society, giving at least thirty days' notice through the public press, and

shall in no case incur any expense exceeding fifty dollars, except by authority of the vote of the society at its annual meeting, when the specific object and the amount so appropriated shall be designated.

6. The President, at each annual meeting of the society, or as soon thereafter as practicable, shall appoint a General Fruit Committee, consisting of one member from each Senatorial District in the State, and it shall be the duty of each member to report upon the fruit crop in his respective district annually; also, a limited list of fruits best adapted to general cultivation in the district which such member represents.

7. That committees on vegetables and market gardens, flowers and floriculture, trees for the forest and forest culture, and entomology, be appointed each year, whose duty it shall be to report on their several topics to this society at the annual meetings.

Mr. Wm. Cannon presented the report of the committee on varieties of flowers to be recommended for cultivation. The report was adopted. It is as follows:

ANNUALS.

Astors, Balsams, Candytuft, Catchfly, Caliopsis, Cockscomb, Escholtzia, Larkspur, Morning Glory, Morning Bride, Mignonette, Petunias, Phlox Drummondii, Portulacca, Sweet Peas, Sweet Alyssum, Whitlaria, Zinnias Elegans.

HARDY HERBACEOUS PLANTS.

Achillea, three varieties; Asclepias Tuberosa, Clematis, Erecta, two sorts; Columbines, Dielytria or Bleeding Heart, Delphinium or Double Larkspur, German Iris, Hollyhock, Lychnis and Japan Day Lillies, four varieties; Lily of the Valley, Pardonthus Chinensis or Blackberry Lily, Native Phloxes, Peonias, Pansies, Perennial Flax, Phloxes, May Pinks, Ledunis, Sweet Williams, Spireas, Tall Day Lilies.

HARDY SHRUBS.

Acacia or Moss Locust, Barberry (common and purple), Burning Bush (Wahoo), or Strawberry Bush, Buckthorn, Carrigana or Siberian Pea Tree, Cranberry, Yellow Flowering Currant, Charles the Tenth Lilac, Purple, White and Persian Lilacs, Lilac Josekia, Upright Honeysuckles (three kinds), Hyderangea Dentzalfolia, Hyderangea Boreii, Hyderangea Panicula.

DUTCH BULBS.

For Fall planting only—Hyacinths, Tulips, Crocus and Snowdrops.

TENDER BULBS.

For Spring or Summer planting—Gladiolus, Cannas, Caladium Esculatum, Dahlias, Madeira Vine, Tigreda or Shell Flower, Tuberoses.

HARDY BULBS.

For Spring or Fall planting—Lilium Auratum, L. Candidum or old Garden Lily, Japan or Lancifolium Lilies, Tiger Lily and Native Lilies.

BEDDING PLANTS.

Achranthes, Alternantherus, Centaureas, Double Petunias, Feverfew, Zonale and Sweet-Scented Geraniums, Gazanias, Heliotropes, Lobelias, Lantanas, Pyrethrum (Golden Feather), Tea, Bourbon and Noisette Roses.

TENDER CLIMBERS.

Manriandis, Colea Scandens.

HARDY ROSES THAT NEED NO PROTECTION IN WINTER.

Yellow Harrison, White, Yellow and Pink Scotch Cinnamon Roses, Old Blush Rose, Sweet Brier.

ROSES THAT NEED PROTECTION.

Hybrids, Perpetuals, Moss Rose, Madam Planter (a fine white), George the Fourth, Russell's, College Centifolia (pink and white), Old Cabbage Roses, Tuscany Rose, Miralba, Monthly Cabbage, Old White.

CLIMBING ROSES THAT NEED COVERING.

Queen of the Prairies, Baltimore Belle, Seven Sisters, Gem of the Prairies.

TENDER SHRUBS THAT GENERALLY NEED PROTECTION IN WINTER.

Flowering Almond, Wigelas, Rosea and Alba, Spirea, Prunifolia and Billardin, Tree Peonia, Tamarisk Africana, Calicanthus, Purple Fringe or Smoke Tree, Deutzia, Gracalis and Crenato, Japan Quince, Celthra Alnifolia or Spice Bush, Deciduous Cypress.

HARDY CLIMBERS.

American Ivy, Virginia Creeper, Celastrus, Scandens (Climbing Bitter Sweet), Clematis or Virgin Bower.

TENDER CLIMBERS.

Honeysuckle, Scarlet Trumpet, Yellow Monthly, Monthly, Fragrant and Parifolia, Chinese and American Wisteria.

After the adoption of the flower lists, the following resolution was offered and passed:

Resolved, That the thanks of this society are hereby tendered to John E. Booth, for his contribution of green-house plants and cut flowers that graced our table, and to Messrs. Stubbs and Hoyt of this State, and Mr. Pepper of Wisconsin, for their contributions of fruit.

It was also

Resolved, That we would urge upon our delegation in Congress to use all means in their power to secure the adoption of Mr. Dunnell's bill, with the amendment of Senator Freeman of Jackson county, allowing two quarters on each section instead of one, as provided by the act of March, 1873.

A motion was made and carried to adjourn till 9 A. M. to-morrow.

FOURTH DAY.

President Smith in the chair.

A resolution was offered and passed, that the President, retiring and incoming Secretaries, be authorized to act as a committee on publication, and be requested to revise all proceedings and communications that have come before the meeting, and reject all matters foreign to the objects of this society or too voluminous to be of general interest.

The following communication was read from the Secretary of the Wisconsin Horticultural Society:

MADISON, Wis., January 20, 1874.

John S. Harris, Secretary Minnesota Horticultural Society, Minneapolis, Minn.:

DEAR SIR:—In accordance with arrangement suggested by me and offered by you, I have this day shipped, by American M. U. Express Co.,

fifty copies of the Wisconsin State Horticultural Society Transactions for 1873, and will be pleased to receive copies in exchange.

I regret that we are unable to be represented at your meeting by a large delegation, but hope this will not prevent the sending of delegates from your society to our meeting at Madison, February 3-5, of which a programme is enclosed. We anticipate an unusually important meeting.

In many respects Wisconsin and Minnesota have the same horticultural wants, and our experiences will be mutually advantageous.

The experiences of the last year—discouraging for the present—will ultimately do good. I look forward with entire confidence to successful fruit-growing in both the States in the future.

Let me express the hope that your society will not confine itself to fruit culture, important as this is. The cultivation of vegetables, of plants and flowers, are parts of horticulture, and should receive attention from our societies.

I regret that time has not been found to fulfill my partial promise to furnish a paper for your meeting. I can only say that there is here in Wisconsin a hopeful field for the future, a growing interest in the cause, an increasing number of local horticultural societies, and an increased interest in horticultural literature.

With best wishes,

Truly yours,

G. E. MORROW,

Recording Sec. Wis. State Hort. Society.

It was voted that this communication be received, and that copies of the Minnesota State Horticultural Society Proceedings be sent in exchange for those we had received.

The President moved that the retiring Secretary be elected a delegate to the Wisconsin State Horticultural Society in the meeting to be held February 3-5.

Carried.

The President made a brief address in which he said that he hoped that we would soon have a permanent fund for sustaining the State Horticultural Society upon a permanent basis. It is asking too much of delegates to spend their time and defray their own expenses in visiting other State meetings. We ought also to have a summer meeting, for the exhibition of fruits that cannot be exhibited at a winter meeting.

A communication was read and received from D. F. Kelly, of Northfield, Minn. (See Reports and Miscellaneous Papers.)

The President moved a vote of thanks to the citizens of Minneapolis, for their princely hospitality, and to the City Council for the use of their Chamber.

Mr. Harris seconded the motion, and said that it was well known that there was no better place for a Horticultural Convention, and no place in the Northwest where the horticultural interest was better represented than in this city.

The motion was carried unanimously.

L. M. Ford, chairman of the committee to award premiums on report of Viewing Committee, said the report on Flowers was an excellent one, and he hoped it would be published.

REPORT OF COMMITTEE.

Your committee to whom was referred the report of the awarding committee of the horticultural department of the State Fair, made by W. H. Kelley and Wm. Cannon, would report that they have examined said report, and would recommend that it receive the premium offered by the State Agricultural Society; but as since our appointment there has been a standing committee appointed by this meeting to examine all documents with reference to publication, therefore this supercedes any action on our part with reference to that matter.

L. M. FORD,
F. G. CARTER.

The report was received and the Secretary instructed to notify the State Agricultural Society of the report made by the committee, and the action of the State Horticultural Society upon the same.

Resolved, on motion of L. M. Ford, that J. C. Fleischer be requested to hand in his essay on the "Cultivation of Roses" for publication.

Mr. Harris moved that Wm. Cannon be requested to hand in his essay on "Green houses, and Management by Amateurs." Carried.

Truman M. Smith moved to take up small fruits, and especially new varieties.

Mr. Harris inquired if any one knew anything of the Desota plum. He had understood that some trees had been sold in Minneapolis. A Mr. Hale, of Lansing, Iowa, is exhibiting bottled fruit of it and selling trees in Southern Minnesota. Says the trees commence fruiting at from two to three years old.

Col. Stevens said that he purchased ten trees of the Desota plum two years since; they were two years old and about three feet high; they bore last year, and he had about a peck of the finest native plums he ever saw. The trees were hardy with him. The fruit is larger and better than the Harrison plums.

Mr. Ford wished to know about the Minor plums.

Mr. Myers, of St. Peter, had trees seven years old; fruit very nice. Commenced to bear at six years old, and ripened with him.

Mr. Moulton said that he had had them since 1867. They had commenced bearing small green plums. Thought if the season was twice as long they might have got ripe. He thought they were small and inferior to most of our wild plums.

Mr. Carter said the Minor plum was very large, but thought he had some wild ones as good.

Mr. Smith had purchased some from a nurseryman, but they were dead when received, and therefore he could not say they were not good. Same with Wild Goose.

Mr. Howe said that he hoped the Minor plum would not be recommended. He had never seen any that were fit for use, and the trees are not hardy.

Col. Stevens had seen the Minor Plum, on Apple River, in Illinois. They were always infested with all kinds of insects. They are worthless for Minnesota.

W. J. Abernethy had seen and raised lots of Minor plums. They were large, handsome and of superior flavor. Thought his were genuine. They came from Galena.

Mr. Moulton said he thought we were cultivating two kinds of Minor plums.

Mr. Harris said he thought so too. He had never tried them, but they had been planted extensively at his place, and no one would speak a good word for them except they had trees to sell. However, to get the opinion of this meeting, he would move that it be recommended for general cultivation.

Motion lost.

Mr. Harris said he could not ignore such a decisive vote as had been given against the Minor, but he wanted *Plums*. Had tried Lombards, Egg, Sages, Damsons, and almost everything that tree peddlers had to sell, and they had all proved poor investments. Has heard of the Wild Goose plum, and would move that it be recommended for general cultivation.

Lost by a unanimous vote.

Mr. Smith, of St. Paul, moved to recommend the best varieties of the wild plum, which is found growing in our own State, for general cultivation.

Carried.

CRANBERRY CULTURE.

Mr. Dartt wished to say a word about Cranberries. They are a valuable fruit and can be grown on land which is worthless for anything else. Thought it would be better if we would spend less of the time in our meetings discussing apples and more upon other fruits, and wished to have this meeting appoint a committee to secure for the society the proper information on the subject.

Mr. Moulton moved that Mr. Dartt be appointed to write a brief essay on Cranberry Culture, to be read at the next annual meeting of this society.

Carried.

Col. Stevens moved that Mr. Myers give us an essay on Cherries for the next annual meeting.

Carried.

Mr. Harris moved to instruct the incoming Secretary to secure an essay from the Professor of Botany at the State University.

Carried.

It was moved and seconded that all parties who had prepared or contemplated preparing essays and papers for this meeting be requested to hand them in or forward them to the Secretary in season to be incorporated in the transactions of this meeting.

Carried.

BLUEBERRIES AND HUCKLEBERRIES.

were then taken up and discussed at considerable length.

Some encouraging words were spoken for the Farmers' Union, and the fruit growers requested to write more for its columns; and Mr. Dartt moved and Mr. Carter seconded, to make the Farmers' Union the official organ of the society.

Carried.

The society then adjourned.

MISCELLANEOUS PAPERS, REPORTS, &C.

[Under this head it is designed to arrange reports from individuals, local and county societies, correspondence and essays, that were handed in to come in the body of the proceedings. Here will be found the individual experience of fruit growers (who have not been in attendance at this meeting) from various parts of the State, and although they only corroborate the experience related in the body of the Transactions, the Secretary deems them worthy of a place in this volume.]

CULTIVATION OF ROSES IN THE OPEN GROUND.

BY J. C. FLEISCHER, ST. PAUL.

During the session of the State Horticultural Society, held in January, 1873, among other matters of general interest, the question was brought up whether roses, and what kinds of them, could be successfully cultivated in our climate.

Those who took part in the debate differed widely in opinion. Some—our President, Mr. Smith, for instance—contended that of three hundred varieties he had not found one capable of withstanding the rigors of our climate, while others, Mr. Ford among the number, recommended the planting of inferior sorts, such as Yellow Harrison, Cinnamon, Sweet Briar, etc., varieties which I would not like to give a prominent place in any well-cultivated garden under any circumstances. Others again, myself among the rest, believed then, as I still believe, that roses of a far superior quality to those recommended, by Mr. Ford, may and can be cultivated to advantage, and this in the open air.

In making this assertion, I may be allowed to remark that the cultivation of roses has been a favorite pursuit and study of mine during the past twenty-five years, fifteen of which I passed in Northern and Southern Germany, and ten in Minnesota. Basing my opinion upon this experience, I will endeavor to impart what knowledge I may have gained, as it

must be the wish of every real lover of flowers to see the rose cultivated in Minnesota to some advantage.

In this respect the florist in the Northwest has the same difficulties to overcome as his colleague, the fruit-grower. Both have to contend against severe cold, biting storms, &c. The fruit-grower is compelled to protect his pets by mulching, enwrapping, and other well known means. The florist must adopt similar measures, if he would be considered a faithful guardian of the tender "children of Flora" that may be entrusted to his care. If we can recommend and practice the cultivation of grapes, blackberries, raspberries and strawberries, neither of which can be successfully raised without protection against the severity of our climate, then there can be no good reason why the rose, that "queen of flowers," immortalized by Anacreon in the following stanza—

"Rose! thou art the sweetest flower
That ever drank the amber shower;
Rose! thou art the fondest child
Of dimpled spring, the wood nymph wild,"

should not receive equal attention, and it should be a matter of pride to domicile this beautiful plant in every garden of this great State, even if a little additional care and labor is required, although, in my opinion, no more than is bestowed upon the grape, &c.

Inasmuch as we are treating this subject with a view to the cultivation of roses in the open ground only, it is appropriate that we should know the quality of

THE SOIL.

This should be highly cultivated, for although the rose will grow in almost any kind of soil, the lack of richness will tend to decrease it in size and in the beauty of its form. The proper soil for the rose is strong, rich loam and well decomposed vegetable mould, cow or horse dung. If the soil be light, holes must be dug and loam and dung forked in at the bottom. Troublesome as this may be, it is the only way to secure a good growth and bloom. The evil of poor soil for the rose is, that it makes the flower that would otherwise be double come single or semi-double. As it is difficult to give the rose too rich a soil, it may be as well to work in a spadeful of dung with it, for it will do no harm, even if the state of the ground be ever so good. Of all soils one of a sandy or gravelly nature is the worst, while, on the other hand, a wet and dense clay is scarcely better. As a general principle, the rose requires rich soil, and if you have it not, you must

change the nature of what you have, by means of dung, or loam, or both.

After the preparation of the soil, we begin with

PLANTING THE ROSE.

Roses may be planted in spring or in autumn. In our State the severity of the winter demands to plant, if planted in autumn, as early as possible, that the roots may take some hold on the soil before winter sets in. The first part of October is the best time. If planted in spring, plant as early as the soil is in working order, that is, as soon as it is dry enough not to adhere in lumps to the spade. In planting, the root must first be examined, and every particle of it that has been bruised should be cut off with a sharp knife, but save as many of the small fibers as possible. If the holes are dug large enough to take the root in without cramping it, let one put in the plant and the other throw in the soil. By moving the stem backward and forward and pulling upward a little, it is easy to work the soil well between the roots. Instead of treading down, give plenty of water, so the soil will be firm around the roots. Be careful to keep the crown of the root near the surface of the ground. If you plant in spring, prune back to three, or even two good stems, at least half way to the ground, but if you plant in autumn, lay this operation over until spring. Next to soil and planting,

PRUNING

Is the most important point of attention. If the plant is very bushy, cut away all the weather branches, leave not more than three or four of the best of the shoots, and shorten even those down to a few eyes. If you wish the plant to continue dwarf and bushy, you may cut down to the last eye or two of the new wood, but leave no thin, half-grown shoots on at any rate. If the plant is a matured bush, with numerous branches and pretty strong generally, shorten the new wood down to two eyes. After this it may be found that you have a great many more branches left on than you require, cut one-half of them close off. It may be, also, that the plant will be improved by cutting some of the main branches clear away, for roses, like everything else, are easily spoiled by leaving too much wood.

The most vigorous growers among roses are the climbers. These require very little pruning; first, because of their vigor, and secondly, because quantity rather than quality of bloom

is asked for them. For all roses, it is the well ripened wood that bears the finest flowers.

One principle of pruning all roses will be: Weakly growing roses should be severely pruned; those of vigorous growth should be pruned but little.

COVERING.

In order to raise the better varieties of roses, especially the Hybrid Perpetual, it is advantageous to leave them in the ground during the winter. This, of course, cannot be done in Minnesota, without adequate covering. About the middle of November, a little sooner or later, as the state of the weather may permit, bend the bushes down upon the ground, and cover them well with earth to the depth of from six to twelve inches. To keep this so-formed hill of earth from thawing and freezing over again, it will be necessary to cover it with straw or old manure. In the spring, say at the latter part of April, when no further danger from heavy frost need be apprehended, the covering should be gradually taken off and the plants pruned in the manner above described. If this be conscientiously done, depend upon it the florist will be abundantly rewarded for all his pains in the sweet and beautiful display of flowers. In this manner I have succeeded in keeping the following named varieties in my garden at St. Paul, during the extraordinary cold winter of 1872-3, without even losing the smallest twig by the action of the frost: Augusta Mie, Baronne Provost, La Reine, L'Enfant du Mont Carmel, Jules Margottin, Triumphe de la Exposition, Souvenir de la Reine d'Angleterre, General Jacqueminot, General Washington, Leon des Combats, Piux IX, Prince Albert, Lydonia, Jacques Laffitte, King of Prussia, Lord Raglan, Madame Plantiere, all of the Hybrid Perpetuals; also the Monthly Cabbage, the Centifolia Kubra Major and Centifolia Unita. Of Moss Roses, Blanche Perpetual, Alfred de Dalmas, Crested Moss, Captain Ingraham, and Comtesse de Murinars. Of Climbing Roses, Queen of the Prairies and the Baltimore Belle.

Even the more tender sorts, as for instance the Bourbon and Noisette roses, &c., can be thus kept through the winter with a little additional labor, thus: Cover the bed of roses, with good, dry oak leaves, to the depth of twelve inches. Do this before the advent of frost. After the frost put on a layer of straw over the leaves, and about six inches of earth, and in the spring when all danger of frost is past, the plants will be found perfectly green and sound.

I have endeavored, in the foregoing, to do at least a little

towards imparting a better knowledge of the culture of a general favorite, whose nature, however, is not sufficiently understood by many, and if I shall have succeeded in interesting even a single lover of roses in working according to these directions, I shall be amply repaid, for success is sure to attend him.

REPORT OF THE COMMITTEE

Appointed to make awards in Classes 53, 54 and 55, in the Floral Department at the State Fair, held in St. Paul, Sept. 23, 24, 25 and 26, 1873, to which was awarded a premium by the State Horticultural Society at their annual meeting Jan. 20-23, 1874.

The committee appointed to make awards on Classes Nos. 53, 54 and 55, at the State Fair, respectfully report the following result of their labors.

The rules made by the Horticultural Society to govern the action of the committee, were as follows:

Exhibitors must have a separate and distinct quantity for each entry made.

Persons exhibiting plants for the largest and best collections, must exhibit them in one body or group, and none of such plants shall compete for any other premium.

In conformity with these rules, the committee have made the following awards:

CLASS 53. FLOWERS AND PLANTS IN POTS—*Professional.*

Best and most tastefully arranged collection of green-house plants. Premium to J. C. Fleischer.

Second best. Premium to J. E. Booth.

Best and most tastefully arranged collection of hot-house plants. Premium to Lemke Bros.

Second best. Premium to A. Bunde.

Best collection of ornamental foliage plants. Premium to J. E. Booth.

Best collection of Cactus. Premium to J. C. Fleischer.

Best collection of Coleus. Premium to J. E. Booth.

Best plant in hanging basket. Premium to J. C. Fleischer.

Best 10 single geraniums in bloom. Premium to J. C. Fleischer.

Best collection Tri-Color and Silver Edge geraniums. Premium to J. E. Booth.

Best 6 Fuschias in bloom. Premium to A. Bunde.

Best 3 Tuberoses in bloom. Premium to Lemke Bros.

Best collection of Roses in pots in bloom, not less than five varieties. 1st premium to J. C. Fleischer. 2d premium to Lemke Bros.

Best collection of Asters. Premium to J. C. Fleischer.

Best 5 Carnation Pinks. Premium to Lemke Bros.

Best Double Petunia. Premium to J. C. Fleischer.

Best 3 named Pansies in bloom. Premium to Wm. King.

CLASS 54. FLOWERS AND PLANTS IN POTS—*Flowers by Amateurs who employ Professional Gardeners.*

There were no exhibitors.

CLASS 55. FLORAL DESIGNS AND CUT FLOWERS—*For Professional Florists and all who employ Professional Gardeners.*

Best floral design, natural flowers and leaves. Premium to Lemke Bros. 2d best—no exhibitor.

Best arranged and greatest variety of Cut Flowers. Premium to Lemke Bros. 2d best premium to J. E. Booth.

Best arranged basket of hot-house Flowers. Premium to Lemke Bros.

Best pyramidal boquet of Annual Flowers. Premium to J. C. Booth.

Best flat-round boquet of green-house Flowers. Premium to Lemke Bros.

Best flat-round boquet of Annuals. Premium to J. E. Booth.

Best boquet of Everlasting Flowers. Premium to J. E. Booth.

Best and greatest collection of Roses. Premium to J. C. Fleischer.

Best and greatest collection of Pinks. Premium to J. C. Fleischer.

Best collection of Verbenas. Premium to J. E. Booth.

Best collection of Seedling Verbenas. Premium to E. Booth.

Best collection of Seedling Verbenas, 1873. Premium to J. E. Booth.

In awarding the premiums, the committee decided to judge on all the smaller contributions first. By this arrangement they were enabled to separate the plants, so that they would not receive more than one premium, and some of the contributors who had arranged their plants for the general effect of the whole, had very few plants left to compete for the high-

est premium. The adoption of this plan left the committee with only the two largest contributions to decide between, and the decision was made for the greatest number, according to the rule above recited, as well as the best and most tastefully arranged collection. For these contributions were made by professionals, and the premiums were evidently offered to encourage florists to make the largest display of their productions. Of course somebody was disappointed with the award, and the acting members were sorry that some gentleman could not have been found to take the place of the absent member of the committee. To show much care was taken to give offense to no one, the Lemke Bros. had contributed a splendid bouquet of what they had entered as annual flowers, but a couple of rose-buds put into the bouquet gave the premium to an inferior collection of annuals by a competitor.

We can sympathize with the florist who loses in a contest for premiums. He without doubt loves his plants, for he has passed his life with them since they were tiny cuttings, and has watched over and guarded them from the many dangers to which they are subject, and when they are placed on exhibition he is justly proud of their appearance; and although a professional may get hardened to his employment and lose the enthusiasm of an amateur, still the professional cannot be blamed for showing some feeling at any seeming slight to his pets.

The contributions to this department were not so numerous as at the fair of the previous year, but they were very fine in quality. A complete list would make some repetition, as certain kinds of plants were in the display of every contribution. The collection of Mr. Fleischer, to which was awarded the first premium, contained the following: *Abutilon Mesopotamicum*, *A. Striatum*, *A. Venosum*, *A. Alba*, *A. Thomsonii*, *Achenia*, *Malvariscus*, *Acacia Lophantha*, *A. Angustifolia*, *A. Conspicua*, *Ardesia Crenulata*, *Asclepia Curasvicia*, *Azalia Indica*, *A. Phoenexia*, *Bouvardia Hogarth*, *B. Leiantha*, *B. Triphylla*, *Begonias* in variety, *Calla Ethiopica*, *Camelia Japonica* in variety, *Carnations*, *Cestrum Auranticum*, *Cuphea Emineus*, *Caladium Esculentum*, *Cytissus Racemosa*, *Cyclamen Persicum*, *Citrus*, *Diasma Alba*, *Euphorbia Splendens*, *Enonymus Japonica*, *Eupatorium Arboreum*, *E. Elegans*, *Echeveria Secunda*, *Ficus Elasticus*, *Fuschias*, *Geraniums*, *Habrothamnus Elegans*, *Heliotropes* in variety, *Hetrocentum Alba*, *Hydrangea Hortensis*, *H. fol. Aurea Variegata*, *Justicia Carneae*, *J. Purpurea*, *J. Purpurea fol. Variegata*, *Jasminum Undiflorum*, *J. Azoricum*, *J. Grandiflorum*, *Laurus Nobilis*, *Libonia Floribunda*, *Myrtus Communis*, *M. Sinensis*, *Nerium Splendens*, *N. Flora Alba*, *N. Bayonet*, *Oxalis Boweii*, *Pittos-*

porum Tobiva, Plumbago Capensis, P. Larpentæ, Rosmariuns Officinatis, Rubus Grandiflorus, Solanum Pseudo Capsicum, S. Pseudo fol. Variegata, Salvia Splendens, Stevia Serrata, Tuberoses, Veronica Andersonii, V. Lindlegana, V. Speciosa, V. Imperialis, Viola Odorata, Viburnum Laurestinus, Weigelia Amabilis, W. Amabilis fol. Variegata, Yucca Filimentoza.

PLANTS FOR HANGING BASKETS.

Geranium—Golden, Ivy Leaved, Balm variegata Ficus, Repens, Gazania Splendens, Panicum Variegatum, Isolepsis Gracilis, I. Pygmea, Kanega Maritima, Linaria Cymbalaria, L. Cymbalaria fol. Variegata, Lycopodiums in variety, Saxifraga Sarmentosa, S. Tricolor, Sedum Carneum, S. Seiboldii, S. Seiboldii fol. Variegata, Tradescantia Viridis, T. Discolor, Fragaria Indica, Vinca Major, V. Major fol. Variega, V. Major Elegantissima Aurea.

CLIMBING PLANTS.

Senecia Hederifolia, Vinca Major Variegata, Cobæa Scandens, Hedera Helix, H. Helix Fol. Variegata, Smilax, Hoya Carnosa, Jasminum Grandiflorum, Geranium Ivy-Leaved, Passiflora Cœrulea, P. Trifasciata.

ROSES—HYBRID PERPETUAL.

Sydonie, General Washington, Alfred Halphin, General Jacqueminot.

TEA ROSES.

La Pactole, La Vesure, Solfaterre, Devoniensis, Triomphe de Luxemburg, Lamaoyne, Soette.

NOISETTE ROSES.

Agrippina, Purple Crown.

BOURBON ROSES.

Triumph de la Ducherre, Souvenir de la Malmaison, Cytheria, Marquise Balbiona, Hermosa, Setina.

Mr. J. E. Booth received premiums on the following plants

COLEUS.

Albert Victor, Beauty, Blumeii, Marvel, Princess Royal, Setting Sun, Verschaffeltii, Hendersonii, Banseii, Spangle.

ZONALE GERANIUMS.

Captain Darley, Cerise Unique, Commander-in-Chief, De fiance, Fire King, Giant Scarlet, General Grant, Hydrangeiflora, King of Scarlet, Lady Turner, Madam Vaucher, Ossian, President, Perfectum, Symmetry, Spilfire, Tom Thumb.

GOLD AND SILVER VARIEGATED GERANIUMS.

Alma, Attraction, Brilliant, Brilliantissima, Countess of Warwick, Flower of the Day, Flower of Spring, Golden Vase, Golden Fleece, Italia Unita, Manglesii, Lady Cullum, Mountain of Snow, Madam Benyon, Mrs. Pollock, Quadricolor, Sunset, Silver Queen.

VERBENAS.

Boul de Nieve, Peace, White Lady, Bridal Wreath, Blanche, Bird of Paradise, Ball of Fire, Brightness, Defiance, General Grant, Startler, Scarlet Circle, Sparkler, Santiago, Sunset, Welcome, Victor, Velvet Mantle, Celestial Blue, Mrs. Fairfield, Zula, Ada, Alhambra, Brunette, Blazing Star, Colossus, Cherry Ripe, Carolina, Clara, Claret Queen, Gettysburg, Harkaway, Gigantic, Lord Craven, Lieutenant General, Magnum Bonum, Moor, Mrs. Christie, Broemar, Charlie, Erebus, George Sterling, Star, Diana, Mrs. Veasy, Venus, Amazement, Dowager, Modesty, Melville, Pluto, Satanella, Mrs. McKay, Mrs. Brinckley, Elizabeth, Flirt, Princess Alexandria, Striata Perfecta.

In Mr. Booth's collection were the *Ficus Elastica*, *Abutilon Thompsonii*, *Begonia Venusta*, *Salvia Splendens*, *Centaurea, Argentea*, *Hoya Carnosa*, *Passiflora Cœrulea* and *Vinca Variegata*. The fountain in the center of Floral Hall was the design of Mr. Booth, and he had contributed the *Calla Lilies* and a Chinese Fern; the *Pteris Serrulata*, for its adornment.

Messrs. Lemke Bros.' collection of hot-house plants, to which was awarded the first premium, consisted of the following: *Begonias* in variety, *Dracaena Australis*, *D. Terminalis*, *D. Rosea*, *D. Punctata*, *Eucharis Amazonica*, *Corypha Australis*, *Phoenix Dactylifera*, *Zabal Palmata*, *Euphorbia Pulcherina*,

E. Japonica, *Pilea Sarpilifolia*, *Pilea Nobilis*, *Aspidistra Variegata*, *Hoya Carnosa Variegata*, *Centradenia Floribunda*, *C. Grandiflora*, *Pasistrophe*, *Sanchesia Nobilis*, *Cissus Discolor*, *C. Argentia*, *Hibiscus Cooperii*, *Passiflora Trifasciata*, *Caladiums* and *Coleus* in variety, *Cyperus Variegata*, *Fittonia Argyronenra*, *Gymnostocia Nobilis*, *G. Vershaffelt*, *Peperomia Arifolia*, *Gesneria Zebrina*, *G. Frugans*, *Lycopodium Lepidophyllum*, *L. Argenta*, *L. Maperum Passicum*, *L. Cordyfolia*, *Blechnum Longifolium*, *Mepiornia Abiatilisa*, *Pteris Longifolia*, *Asplenium Divipasia*, *Lomaria Gibba*, *Pteris Alba Lineata*, *Nephrolepis Neglestum*, *Scolopendrium Vulgare*, *Gymnogramme Aurea*, *Pteris Tricolor*, *Panicum Variegata*, *P. Spitala*, *Pteris Serrulata*, *Bletia Tancaravilla*, *B. Onsedium*, *Cocolaba Plityclada*.

Mr. A. Bunde was awarded the premium on the following fuschias: *Annie*, *Anne Boleyn*, *Acubifolia*, *Bianca*, *Conspicua*, *Crown of Jewels*, *Duchess of Lancaster*, *Day Dream*, *Elm City*, *Garibaldi*, *Glory*, *Rose of Castile*, *Rose of Denmark*, *Sir Colin Campbell*, *Schiller*, *Spesiosa*, *White Lady*.

Mr. Wm. King's collection was the smallest, but contained some of the finest plants on exhibition. His carnations were superior to any others, but they were only four in number. The premium required five plants. In his display were the following: *Myrtus Communis*, *Cissus Discolor*, *Terrana Asiatica*, *Pteris Argyra Variegata*, *Isolepis Gracilis*, several varieties of *Dracaena* and trailing mosses.

It will be seen that no attempt has been made to give a full list of the plants of any contributor, and the small number mentioned must not be considered as any disparagement of the collection it applies to. Where all did so well, the committee would have had a hard duty to perform if rules had not been laid down for their guidance. It was a great pleasure to learn that the demand for flowers and plants is increasing in this community, and that florists are yearly adding to their resources to supply the demand. The love of flowers is almost universal, and the cultivated taste requires the choicest for its gratification. For the purposes of decoration we use them on every possible occasion, from the cradle to the grave. Our wives and daughters are more attractive to our eyes when we ornament them with beautiful flowers, and the pleasure to them is greater in proportion as the flowers are rare and choice. And in sickness when our friends remember us by sending or bringing their choice floral gifts, the great pleasure can be known only to those who have experienced it.

Before closing this report, two illustrations of the different ways that people look at plants may not be out of place. A lady friend who had been admiring the splendid display came

to one of the committee and remarked, that her husband told her that he would wait and she could go and look at the weeds. When that gentleman's soul gets to the spirit land among eternal blooming roses and all the other beautiful flowers of Heaven—flowers that he can love and with the power to return his spirited caresses—perhaps then he will forget that he ever called the beautiful vegetation of this earth by the contemptible title of "weeds." How different must have been the thoughts of an old gentleman who examined minutely many of the plants, and at last remarked that he was reminded of what the Queen of Sheba said to King Solomon, "The half was not told me."

Respectfully submitted,

WM. H. KELLEY, } Committee.
WM. CANNON, }

REPORT OF THE HORTICULTURAL DEPARTMENT OF THE STATE FAIR.

BY THE SECRETARY OF THE STATE HORTICULTURAL SOCIETY,
LA CRESCENT.

After reading the reports of the severity of last winter, which have appeared so frequently in the agricultural papers during the summer, I was most agreeably surprised with the exhibition made at the State Fair, September 23-26. Owing to a frost in May last, the fruit crop was not very large, and a severe drouth had prevailed in the southern part of the State, so that in size and appearance the fruit was not fully up to the standard of the two previous years; but the exhibition made was very creditable, and had a tendency to diffuse new hopes in the minds of those who witnessed it. The large stand in the west wing of Floral Hall was filled to overflowing with choice collections of apples and grapes. Commencing at the southeast corner we will give it a careful examination: First is Mr. Knapider's show of grapes, eighteen varieties, natives and Roger's Hybrids, all fine and well ripened, which draws the first premium for greatest number by one exhibitor; next to the west of him is a basket of Duchess of Oldenburg apples that for size and beauty of appearance cannot be beat this year or any other; a basket of St. Lawrence, several varieties of Siberians and a collection of native plums by Mr. Brainard. Above these is a splendid display of Siberians, by P. A. Jewell,

of Lake City ; all of them attracted attention by their beauty of appearance. Some of them were as large as Golden Russets ; some varieties were delicious for eating from the hand, and all were excellent for cooking. Next are several varieties of hardy apples and Siberians, with a good assortment of native plums, by Mr. Brimhall, of St. Paul. Truman M. Smith, of St. Paul, who never does anything by halves, finishes out this side and a part of the west end with a grand display of grapes, Siberian apples, high-bush cranberries, &c. The remainder of the west end was filled up with fruit from Winona, by Mr. Clark and Mrs. Norman Buck, who also showed a plate of tame plums. Theirs were the best and most extensive collections of apples in the Non-professional Department.

On the northwest corner was a plate each of Tetofsky and Duchess of Oldenburg apples in fine condition, by Mr. Ramsden, who had learned the secret of making summer apples keep all winter. On the north end of the north side Mr. S. Bates, of Winona county, showed over twenty varieties of apples and several of grapes. He showed Netter's large red apples, of an enormous size and splendid appearance ; they were raised by top grafting on the Transcendent crab, and by this process the trees went through the last winter without injury. Next was a plate of Concord grapes, shown by a St. Paul lady, that surpassed any of that variety on exhibition. Above these Mr. Hawkins showed eight varieties of standard apples of great excellence. Next to him was a display of native and Rogers' Hybrid grapes, by Rev. C. B. Sheldon, of Excelsior, and thirteen varieties by Mr. Gould, of the same place. These two collections were remarkable for size of bunch and berry, and showed that the growers understand their business. The remainder of the north side was occupied with the magnificent collection of Moulton & Co.—apples and grapes so tastefully arranged that they were the most fascinating display in the Hall.

The east end was filled chiefly with a collection of twenty-six varieties of apples and several of the Siberians and eleven of grapes, from the garden of J. S. Harris, of Houston county. There were a few pears of enormous size, grown in California, and some from Virginia upon the stand, but none of Minnesota growth.

There were also several collections of apples and grapes in Railroad Hall, raised along the line of the Northern Pacific Railroad, and they were fully equal in appearance to those raised in the southern part of the State. The show of flowers in pots by professional florists was extensive, and showed a marked superiority over the exhibitions of previous years. The show of plants by amateurs was not large, probably owing

to the cold and unfavorable state of the weather, but many of their plants were most skillfully grown.

The show of vegetables was large and fine, and on the whole the Horticultural Department of the Fair was a grand success.

The show of fruit tells to the world that the fruit-growers have nailed their flag to the mast, and will not surrender until the last apple tree is dead and no seed can be procured from which to raise more. The flowers speak of our Minnesota as the home of those who love and cherish the good and the beautiful.

JOHN S. HARRIS,
Superintendent of Division H.

CONSTRUCTION AND MANAGEMENT OF GREEN- HOUSES FOR AMATEURS.

BY WILLIAM CANNON, MINNEAPOLIS.

To those who wish to extend the cultivation of flowers, beyond the use of annuals, it is necessary to have a green-house, if only a modest affair; and the house most suitable for amateur florists is the span-roofed. It should be sheltered from the north and run north and south, so as to receive the greatest amount of sun in the winter. It is best to grow good shaped plants, and the easiest to attend their daily wants.

A good house can be built by having a wall of brick twelve inches thick and four feet high for the sides; brick up the ends, having one door in the north end, and having a wood shed and work-room for your furnace at the entrance. Have the rafters of sufficient depth to admit the use of double sash in winter, also to cover with canvas or light board shutters on very cold nights, as it is much better to retain heat than to continually keep up the supply by extra fuel.

An excess of artificial heat is injurious to plant life, and our usual mode of heating (by furnace) too dry, unless care is taken to avoid it by sprinkling or by water placed upon the flue.

The cheapest mode of heating is by a brick furnace, about fifteen inches wide and high, and long enough to admit four foot wood. The fire will burn better if you have a grate, but it is not absolutely necessary. The furnace should be two thicknesses of brick (for the inner one fire-brick are the most

desirable.) The flue should be six inches wide at the base and top, and for the sides place bricks on edge and plaster upon the inside, the whole passing round the house with a gradual ascent from the furnace to the chimney.

To those not having the means to build an expensive house, a wooden frame building will answer every purpose, if care is taken to make it tight and secure from frost; but as a rule avoid cheap buildings for a green-house, for they will become dear enough in the end. Use only the best materials and those of the most durable kinds, as the alterations of temperature and constant moisture speedily affect the best timber, and the poor material will soon be rendered useless by dampness and decay.

In stocking your house, take first all those well known (although old) and reliable, as trying to cultivate store and green-house plants together will only end in disappointment.

For shading from the sun use whitewash, in which a handful of salt has been mixed, and apply to the roof on the outside. This is durable enough to last all summer.

SOIL.

For all plants usually grown in the green-house (especially soft wooded plants) use loam, leaf mould and sand, and a little rotten manure, well mixed together. Such soil will remain loose and porous.

POTS.

Use only the common flower pots, as they are more porous, and the plants will thrive better in them than in glazed ones, of either glass or china, or fancy painted pots.

POTTING.

So much has been said and written upon this point about drainage that it is hard to determine in every case what is best. My experience has been to dispense with potsherds for drainage (using the coarse soil only) in all pots less than four inches wide. Care should be taken to have the soil pressed firmly about the roots by a few sharp raps upon the bench, always leaving sufficient room for watering. Care should also be used to avoid having plants in too large pots, as the soil becomes sour and the plants become sickly by so doing. Always protect fresh potted plants from the sun for a short time.

WATERING PLANTS.

Watering is one of the most important duties in successful

plant growing. The best time to water plants is at sunrise or at evening, and use rain water if at hand. My experience favors a thorough soaking when dry, as plants slightly watered every day often perish. Water may be given at the root at any time, but not sprinkled over the leaves in a hot sun, as it will blister and spoil the foliage. Cold water, before being applied to a heated soil, should be exposed to the sun for a few hours.

INSECTS.

The green fly is one of the most troublesome insects that infest green-houses. Fumigate with tobacco about once a week, either morning or evening, never during the day while the sun shines, as it will injure the foliage.

Red spider can be avoided by keeping the house moderately damp, but care should be taken not to have it damp enough to cause mildew upon the plants or in the house.

In conclusion, allow me to say that gardening is the most ancient of all arts. An occupation so ancient and so full of pleasure and profit to man is entitled to respect, and is worthy of the devotion of all who have control over even the smallest portion of "mother earth."

There is no one, whether it be the merchant absorbed in the duties of his office, or the mechanic engaged in his laborious art, or the housewife encumbered with domestic cares, who would not be better for the change of employment in body and mind which an hour or two devoted daily to gardening would afford. Flowers are nature's holiday garb, and to all lovers of nature and art have become an indispensable luxury. In the cultivation of flowers each one can indulge their peculiar fancy, and each one's character will represent itself in the taste indulged. The motives for the cultivation of flowers are as various as the tastes of mankind. They are the simplest and least expensive ornaments of the homestead, imparting an air of taste and comfort and awakening dreams of beauty, especially in the minds of children, that will never fade from memory.

Flowers abundantly compensate those who cultivate them by the associations to which they conduce. They are socializing in their tendency. The flower garden diffuses pleasure beyond its own precincts, and gladdens other hearts than those of its possessor.

"Bright gems of earth, in which perchance we see
What Eden was, what Paradise may be."

REPORT OF LAST YEAR'S EXPERIENCE IN FRUIT GROWING IN MINNESOTA.

BY M. C. BUNNELL, MONEY CREEK.

Last year proved a severe one on a great many varieties of standards; not only in this State but in other States they suffered to a greater or less extent. Being a dealer in trees in Minnesota, I have had a very good opportunity to learn the opinions of others interested in getting orchards. Some are inclined to think it is a poor investment to buy standards in this country, and nothing but crabs will prove a success, while others think it is not best to give up yet, but replace with hardy varieties.

Minnesota is not alone in this misfortune, consequently we should take new courage and replant with good hardy varieties. I find that there are but a few who refuse to try it again. To be sure we have been disappointed in varieties that we termed hardy previous to the winter of 1873, but nevertheless I think those same varieties are going to produce fruit here in abundance some years. Because they injured last winter is no indication that they can't be fruited here.

We may not get another such winter for the next generation, and I find that a great many others take the same view. Farmers might say that, because certain products of their farm proved a total failure one year, they would never try the same crop again, on the same principle that we would discard the idea of raising standard apples in Minnesota because the trees killed in 1873. The success of raising fruit in this State I attribute to the soil, also location. I believe that the soil as it becomes older is better adapted to the standard apple. The tree gets a slower growth, it ripens up better in the fall, therefore stands the winter better. Some have more favorable locations than others, north and east, which I consider the best where trees can be kept back in the spring and the sap not allowed to start too soon.

I find that the Duchess has given general satisfaction, also Tetofsky. In some locations the Fameuse stood very well; more fault found with the Ben Davis than any other varieties that have been recommended for cultivation. I observe that orchards on high ridge land came through much better than

on the low ground. Banking up around the trees with earth in the fall before it freezes is a great protection to them through the winter. I have learned that by practical experience. Would advise those who want orchards for profit not to set too many varieties, but take pains in selecting hardy varieties, and plant largely of those.

The Haas and Walbridge should have a fair test. Saxton, I think, will stand in all ordinary winters.

One cannot expect to be successful in getting an orchard without he gives it proper attention. And I don't know why it is not for the farmer's interest to spend a portion of his time in horticultural improvements as well as in making other improvements.

Faith and works go together. If one has faith that he can grow an orchard, and goes to work to do it, he is pretty sure to meet with success.

FLOWERS.

BY J. S. HARRIS, LA CRESCENT.

An essay read before the State Horticultural Society, at the summer meeting held in Minneapolis, July 4th, 1872.

LADIES AND GENTLEMEN :—Although I have been an enthusiastic lover of flowers from my earliest childhood, and fully realize that earth possesses no greater charms than a little flower garden all one's own, I feel very forcibly my inability to do anything like justice to a subject which the sweetest of poets have lauded to the skies and the ablest pens have essayed upon—a subject which points us back to a "Paradise Lost" and urges us a Paradise to regain.

Floriculture shuts out the darkness of sin and lifts the veil to refreshing bowers, luxurious verdure, pure crystal streams and breezes that waft out upon a fallen world the sweets of fragrance, the spices of life.

The cultivation of flowers, whether it be the tiny plant in the cracked cup of the poor man's cottage or the stately palm, or other tropical glories in palatial gardens and crystal palaces, is wielding an influence to elevate the human race which no one to-night can tell, no pen describe.

It is calculated to engage the intellect, and open fields of inexhaustible treasure which the longest life is far too short

to fully explore, and will forever be replete with animating discoveries of new beauties. To stand upon an eminence in the midst of a beautiful landscape, to behold the "king of day," after having cheered a world with light, life and warmth, as he sinks beneath the horizon, touching up the tree tops, rocks, hills and threatening clouds with lights and shadows, is glorious.

It is a glimpse into paradise, a foretaste of the bliss of heaven. The first is like the passing away of the life of a good man, the last like the beginning of the life of glad childhood. Leigh Hunt says: "Flowers sweeten the air, rejoice the eye, link you with nature and innocence, and are something to love. If they cannot love you in return they cannot hate you; cannot utter hateful words, even if neglected, for though they are all beauty they possess no vanity."

Rand, in his "Flowers for Parlor and Garden," says: "The love of flowers is universal. It is an old melody which, first attuned in earliest time in the golden age of legendary lore, has come down to us, growing more mellow and sweeter as it chimed through the centuries, and now as then echoes with a music akin to that of heaven in the human heart."

I will say, in addition to Leigh Hunt, that flowers sweeten the disposition, lighten the burden of toil, and soothe sorrow; and I will agree with Mr. Rand that the love of flowers is nearly universal where civilization has reached, and the love ought to be encouraged by every friend of mankind. But the degree of this love is as varied as the individuals of the human race.

Flowers add very much to the attractions of a home; they hide deformities and cover imperfections; they fill up the depressions and round the sharp angles that would otherwise be painful to the cultivated taste. It is not the grandest architecture, the latticed casements and marble pillars that adorn the palatial residences upon the grandest avenues of our American cities that attracts the notice of the travelers, so much as the sweet fragrance of brilliant flowers and the rich hues of trailing vines that adorn, drape and embower them. Rich and gaudy clothing may attract the attention from the plain face, but the humble flowers will be seen before the most stupendous works of man.

It is difficult for me to tell you what flowers to plant, and what selection to make from the scores of thousands that have been brought into cultivation. The varieties of flowers have been so much improved within the last twenty years, and many rare gems added to our collections, while their cultivation, especially as house plants, has been greatly simplified. But probably in no class has there been so great improvement

as in what are usually termed bedding plants. As this class of plants is best adapted to the wants of the people universal, I will devote the remainder of the time allotted me to mentioning a few of the most common and easily procured. As commonly used, the term "bedding" is given to such plants as in winter require the protection of the green-house, but which, if planted in the garden, bloom profusely during the summer. Some of them may be raised from the seeds, as annuals, and will bloom profusely in the autumn; but generally the best results are secured by raising them from cuttings in the early spring.

First of all, I will mention the Geranium. I love them, the name is so sweet, the flowers so bright, the foliage so pleasing. They are well known, and the old Fish and Rose-scented were favorites in the days of our childhood. Great improvements are yearly being made in the varieties, and they are all rapidly growing in popularity. They are brilliant and continuous in flowering, and a mixture of varieties form a bed of great beauty and elegance; but perhaps the best results are obtained from planting in groups or masses of single colors. There are several classes of them, but for our purpose the Zonale and Sweet-scented are the best. Of the Zonale, I would recommend the President and Gen. Grant for scarlet; Rival and Regalia for rose; Blue Bell and King of Pinks for pink; Clorie de Carbery and Bridesmaid for salmon; Emily, Vaucher and Snowball for white; the Rose and Lemon-scented for fragrance and for leaves to use in the formation of bouquets.

Next in order will come the Verbenas, which give the garden a gay and lively appearance. They are probably cultivated more than any other variety of plants, and they are all that can be desired for quantity and variety of bloom. They may be grown each year from seed, but are now sold so low by all florists that it is more economical to purchase plants of the desired colors, as many of the seedlings will prove inferior and are later coming into bloom. It is hardly worth while to enumerate the names of varieties, as those which are considered standard this year will give place to others in the next. Many new candidates are brought out each year.

Heliotropes fill important places among bedding plants. They are desirable for their fragrance, as well as for their profusion of flowers of various shades of blue and lilac. They propagate readily from cuttings, but old plants give the most flowers.

Of the Salvias, the *Salvia Splendens* is the most gaudy, and in fact of all autumn blooming plants the most desirable. The small plant purchased of the florist in the spring, becomes a beautiful bush by September, three or four feet high, and

covered with tassels of the brightest scarlet flowers. They are, however, very tender, and will be entirely destroyed by the first frost. They may be grown as an annual by sowing the seed in a hot-bed.

Among the "Feverfews," the double white "Feverfew" is indispensable in the smallest collection of flowers, as it blooms freely throughout the whole summer and is so very useful in the formation of bouquets.

If time would permit I should love to speak of roses, pinks, dahlias, fuchias, pelargoniums, and hosts of other favorites; but I must refer you to the splendid exhibition which the ladies and gardeners of Minneapolis have arranged so tastefully in this hall; and I must confess that my greatest help in this, my first attempt in essaying, came from witnessing a gorgeous sunset while passing through Lake Pepin as the last rays fell upon the famous Maiden Rock, and my visit to this hall.

In conclusion, I advise every lady to grow flowers and make Paradises to sweeten their lives. And do not be satisfied with growing them. Set them on your table, a whole bouquet if you have it; if not, a single flower, a rose, a pink, a violet, or a geranium leaf, the best and sweetest that you have, to remind you of the elegance of nature's productions, the glories of creation and the bliss of heaven. Give them freely to the children of the poor, and plant them where they may gladden other eyes than your own. This is a blessed world if we would make it so.

REPORT OF O. D. STORR, WINSTED LAKE, IN REPLY TO CIRCULAR OF THE SECRETARY.

1. I have about thirty-five different varieties of apples, among which are the Duchess, Haas, Ben Davis, Tetofsky, Red Astrachan, Perry Russet, Tallman Sweeting, Sweet Pear, Saxton or Fall Stripe, Wealthy, Morrison's Treasure, Julia, Bellflower, Walbridge, Black Vandivere and several others, also many varieties of crabs.

The first eleven varieties are three and four years old, trees planted out two years ago, all froze more or less. Morrison's or Shakopee, injured the least, only three or four inches late fall growth; Wealthy, one-half the tree killed, Julia killed to the snow line. The others killed half-way down, others to the

snow. These were yearlings set out last October. (I suppose this refers to the Shakopee and other new varieties.)

2. I have only one variety that has come through without injury to either trunk or branches, and that is a seedling called the Winsted Seedling. Ben Davis killed back from three to six inches. Red Astrachan, some dead, and others in the same row not injured. Tallman Sweeting, the tips of last year's growth frozen; trunk and branches all right. Haas, the trunk is killed close to the ground; the tips but very slightly injured. Sweet Pear, dead root and branch. Duchess, Minnesota grown, not injured; Illinois and Wisconsin trees killed back.

3. None but the crab varieties are bearing except the Winsted, that is budding all right.

4. My soil is a black clay loam, with clay subsoil, mixed with lime, on the south bank of lake, and slopes to the north; no protection. Last year, part in wheat, part in potatoes and garden vegetables; this year all in corn.

5. I have one seedling tree that is worthy of note, that is in bearing. Since it first came from the seed it has never killed back a bud. The fruit is a little larger than the Duchess; smooth yellow skin and a good keeper; will keep until March or April; a very pleasant sour, fine-grained and rich flavor. It has never had any protection from cold or sun. The fruit ripens the last of September, and it will more than fill the place of any Russet.

6th, 7th and 8th. None.

Plums—I had the Lombard, Miner and Richland Purple. The Lombard killed to the root, were five years old and froze each winter. Miners and Richlands all right.

REPORT OF E. P. EVANS, BROWNSVILLE, FOR HOUSTON CO., MINN., AND VERNON CO., WIS.

I have examined a great many orchards in both of the above counties since June 1st, and find the trees ranging in hardiness as follows: First, Siberians; second, Red Astrachan; third, Duchess of Oldenburg; fourth, Fameuse (snow); fifth, Golden Russet; sixth, Tallman Sweet; seventh, Haas and Ben Davis. But very few trees of Rawhey's Jannet, Northern Spy, Autumn Strawberry, Perry Russet, Fall Stripe and Fall Winesap, that have been set from four to ten years, will ever bear any more fruit. Full 60 per cent. of the old orchard

trees are dead. Orchards in sod have done better than those cultivated. Orchards sowed to grain or corn did better than those planted to potatoes. Orchards taking free blast of north and west winds are better than those sheltered by belts of timber. The injury is mostly in the body and roots. Considerable damage was done in the crotches of low-top trees. Twenty per cent. of our Transcendent and Hyslop crabs died from root killing, and consequently I think our *ironclads* are very scarce, unless grafted on the Siberian roots.

Of pears, cherries and plums, scarce 6 per cent. are alive, except of the Miner plum. It has done about as well as the native.

Vernon county, Wis., comes out about 30 per cent. better than Houston county, Minn. The above counties are separated by the Mississippi river; soil and climate as near alike as possible. I think the difference is in the varieties planted. In Vernon county they planted mostly of the *ironclads*, such as the first seven varieties mentioned above, while Houston county planted of whatever tree peddlers happened to bring along.

I was like a great many others who did not approve of Charles Waters' method of cultivating orchards, viz., plowing between the rows and leaving full stretch of the tree's branches to sod, but his orchard proves that his theory is right. It is the healthiest and best of over a hundred that I have seen this summer.

There are three seedling apple trees in Vernon county that are worthy of note. One grown by C. S. Sterton, this year's growth eight to twelve inches, bearing a few apples. Another was grown by Mr. Weitz, growth this year six to ten inches, bearing about five or six bushels this year. This is a splendid market apple. It bore its first apples the fourth year from seed, a half bushel the next year, and a heavy crop every year since, and last year ten bushels.

The third by Mr. Yeely, good market apple, vigorous healthy tree.

REPORT OF D. F. KELLEY, NORTHFIELD.

Regretting my inability to attend your session this week, I send you a brief report of the condition of my orchard since last winter.

The winter made sad havoc with my seedlings, of which I

had about one hundred in bearing, the majority of them from eight to ten inches in diameter. One-third of them are "dead as a smelt." Another third are more or less damaged. The balance are all right, though they did not bear very profusely last season.

I have gathered 150 bushels of apples from these trees in one year, and previous to last winter had considered the trees perfectly hardy. In the spring of 1872 I set about 3,000 root grafts, the scions of which were mostly taken from these trees. They came out last spring in very good condition, and, although they did not make a very large growth last season, appear to be healthy.

The early fall apples came through the best. Those producing sweet and winter fruit suffered the most.

I am not wholly discouraged with reference to raising apples in Minnesota, as are some of my neighbors, though I must say my faith is somewhat shaken.

REPORT OF BARNETT TAYLOR, FORESTVILLE.

About fourteen years ago, I saw in the American Agriculturist the enquiry of J. S. Harris, of La Crescent, Minn., as to the best way to start a fruit garden. About that time, without experience, health or money, I commenced the same business with the determination to raise fruit in Minnesota. Will state my success by stating the fact, that last year I had 27 varieties of splendid apples, with fine pears, plums and other kinds of fruits; some trees yielding \$10 per tree, and of course things looked bright. You know without my telling it how things are changed this year; although my experience differs from yours, as you state in the Farmers' Union that your Sweet Pear and Haas are but slightly injured; my Sweet Pear are about done for; Haas some entirely dead; all badly injured. Early Harvest, Northern Spy, Sam Bough, and Primate in same condition; Sops of Wine and Perry Russet badly hurt; Duchess 8 or 10 trees killed in the roots, but the rest of the Duchess, 50 to 75 trees, in fine condition, Tetofsky all right, and strange to relate, Grimes' Golden wintered without the loss of a bud. Early Richmond cherries unhurt. Flemish Beauty pears slightly damaged. The encouraging fact is, that all hardy kinds where well mulched or shaded are but little hurt.

All kinds on clean ground killed more or less. I set an orchard one, two and three years ago for a neighbor, on high prairie, cultivation corn. The stocks stand over winter; every tree came through splendid.

CRYSTAL LAKE, June 16, 1873.

To Secretary State Minnesota Horticultural Society:

DEAR SIR:—I noticed in the Farmer's Union of May 24th, a circular from the State Horticultural Society, with the following caption: "Information wanted." Believing it to be the right course for us to pursue, and being somewhat interested in fruit culture, I propose to give my mite of experience, and if we all do the same we can come to some conclusion as to what fruit it will do to cultivate and what not. I feel disposed to differ from you in regard to our winter. You state that "the winter set in early and dry, and frost penetrated to a great depth before any snow fell." That might have been with you, but not with me. To be sure the winter set in early, on the night of the 12th or 13th of November, with several inches of snow and no frost, and we kept having snow storms before the ground froze any; and that is just what played the mischief. It was the absence of frost and not its presence that has caused so much mischief, and I think that if we had removed the snow from under the trees and let the frost penetrate down to its usual depth, and then mulched to keep the frost in we should have had quite a different result. I think that our trees were *spring killed* and not *winter killed*. Our hot sun in March caused the sap to flow to the tops of the trees, and then it turned cold and froze, and that is what has killed our fruit trees. I came to this conclusion from the following reason: I had a piece of land about 1 1-2 acres that I planted to potatoes. On planting that piece this spring I plowed up perhaps a bushel of potatoes as sound and handsome as any potatoes that I ever dug in any time of the year. They eat as well as those that I kept in the cellar. I have planted the same piece this spring and the best potatoes that I have on the piece are those that came up themselves, and are budded to blossom.

Now sir, we all know that when the frost penetrates to a great depth in Minnesota that potatoes will not stand the test.

The piece that I had reference to is on an eastern slope—the same result out on the prairie where the snow had drifted.

And now to your questions.

1. I have the following varieties of five year old trees, Transcendent, Hyslop, Soulard, Red Astrachan, Stewart's No. 7 (Honey Sweet.) Stewart's No. 7 is the only apple tree that I have but what has been more or less affected, I never have mulched it summer or winter, and it never has killed in root, branch or bud to my knowledge. The same tree has stood on the prairie beside the Tetofsky, Transcendent, Hyslop and Soulard; all others have been more or less injured, but No. 7 is all right, I do not know anything about the fruit; my trees are bearing this season for the first time.

I purchased some trees of the following varieties (three years old), Gen. Grant, Akin's Green Winter—both killed to the ground—also, Ben Davis and Perry Russet. The two last are so badly killed that I consider them no better than dead. The Haas and Fameuse, of the same age, also Alexander in our neighborhood have killed; Duchess, of several years bearing, killed and badly injured.

Nos. 2 and 3 I have answered in No. 1, *i. e.* Stewart's No. 7.

4. Sandy loam, clay subsoil; edge of prairie and bluff land.

5. I have no seedlings of my own. Have been propagating from about 50 varieties of our hardiest Hennepin county seedling, which we have considered perfectly hardy, have been more or less injured.

6. I am propagating from a seedling pear tree that has never killed unless this winter. Have not been informed how the tree is this spring.

7 and 8. We are cultivating Wilson's Seedling, Agriculturist and Scarlet are the principle ones cultivated.

Plums—I have none except choice natives, and if any one has got any that are better I would like to get some.

Cherries—I purchased several trees several years ago of the Morello Cherry; they are about four inches through, and killed last winter. Have some of the Early Richmond, injured considerably.

I have about eight or ten thousand seedling apple trees, one and two years old; I think I can select about 50 that have not killed a bud, that stood beside the following varieties that killed down to the snow: Ben Davis, Fameuse, Densmore, Morrison's Treasure and a host of others equally hardy.

J. H. WHITE.

REPORT OF J. H. THOMAS, YOUNG AMERICA, MINN.

As my business will not permit me to attend the Horticultural Society I will here state some of my experience with fruit-growing the past year. I have had some trees killed within the last year. Apples—Transcendent and Duchess of Oldenburg, were the only kinds that were not injured; Soulard, Hyslop, Haas and Tetofsky, lightly hurt; Ben Davis, Perry Russet and Tallman Sweet, all killed, Flemish Beauty Pear, killed to within one foot of ground.

My grape vines were all buried with earth about two inches deep. The Delaware came out best, and fruited well; Clinton next best; Franklin next; Roger's Hybrid No. 15 killed. Salem, Iowa, Logan, Martha and Isabella, killed root and branch; Hartford Prolific and Concord, all of the vines killed; they made good growth during the summer. I have four kinds without names that went through in good condition, one is short wood, leaf five-lobed, and lighter color than any I have. It ripened about the last of August, and is a better grape than the Concord, but not so large. The next best is a white or yellow grape, that came to me for an Isabella, and the next is a blue grape, size of the Clinton, leaf and young wood, color light yellow, came for Golden Clinton, but the fruit is of a wrong color; Eumelian and Maderia too young to fruit, but the vines went through in good condition.

Small fruits, currants, &c., did not fruit heavily, and some twigs were killed. The gooseberry fruited heavy, and was not hurt, while the raspberry, Davis, Thorn, Doolittle and Blackcap, fruited well, with no protection and but little care.

My soil is black loam, about 12 to 14 inches deep, with yellow clay subsoil. It was formerly covered with oak timber, with a few elm and bass-wood undergrowth, hickory and some hazel brush.

**REPORT OF G. A. PERLEY, WASIOJA, DODGE CO.,
MINN.**

Having read a communication in the Farmer's Union, from the Secretary, in reference to the coming meeting of the State

Horticultural Society, and wishing to cast in my mite for so good an occasion, I venture to send a little of my experience, to be disposed of as may be seen fit.

In the year 1865, my first year in Minnesota, we bought \$100 worth of apple trees from a nursery in Rochester, N. Y., twenty of which trees were dwarfs. The balance of several varieties, called hardy, were healed in in the fall of 1865. In the spring of 1866 we set them out in rich black soil, with a slight mixture of sand. This soil was too feet deep, with a subsoil of yellow clay. This land would be called low or bottom land, sloping to the south. About one-half of the dwarfs died that summer, and in the fall of 1867 there were but three of them alive, and they in a sickly condition. The other trees, when bought, were from four to six feet in height. The winters of 1867 and 1868 were severe on them, and the mice, too, wished to help along the matter of destruction, as they had girdled thirty. The summer of 1868 showed that they were struck with death. The pocket gophers, not wishing to slight me showed what they could do, as they had cut off a great number of the large roots of the live trees, and in 1870, there was not one left out of the entire number.

Not wishing to give up the undertaking, I concluded to try another plan, and in the fall of 1871 I planted some seeds from the Snow and Maiden Blush apples, grown in this latitude in Wisconsin. These seeds were planted on sloping ground, on the north side of a few rows of cottonwoods four years old, the first row being six feet from the cottonwoods, the others four feet each from this, all the rows running east and west. In the fall I counted 200 trees. As the winter of 1872-3 was so severe I did not expect any of them would survive it, as I had cultivated them pretty thoroughly. In digging them up this last fall I found but thirty of the two hundred had died.

I should think there were about six varieties, some quite wild-like, being thorny and small, while others had but few limbs, a dark glossy bark, and were three feet in height; others again were of a yellowish-green bark, two and a half feet tall. These had to be watched with care during the latter part of summer to prevent their being destroyed by a worm from one-half to three-fourths of an inch in length, and in color resembling the bark and the green leaf of a tree, on which it would feed until every leaf was devoured.

Perhaps you may wish to know my plan for setting out some more in the spring. I intend to dig out the holes for them three feet in diameter, two feet in depth, and twelve by sixteen feet apart, on an eastern slope of black loam. These holes I shall line and partially fill with the refuse stone and

soil of a limestone quarry ; on the top of this and immediately under the tree I shall place a thin flat stone ; over this I will set the tree, with black loam. The flat stone will prevent the roots from running down into the cold, wet soil, and the refuse stone will cause a slow but hardy growth. In this manner, and by trapping the pocket gophers and a careful watching of the mice, I hope for success, and will give the result in the future.

REPORT OF W. B. SMITH, OWATONNA.

Secretary Minnesota Horticultural Society :

DEAR SIR.—I am pleased with the course you are taking to get information in regard to fruit growing in this State, and will contribute my mite.

1st. I have about 175 trees of apples and crabs that have been set from one to six years. The apples are Duchess, Tetofsky and Ben Davis.

2d. The Duchess and Tetofsky came through the winter without injury.

4th. My soil is clay and gravel ; have mulched and hoed until this year ; have seeded it down this year. Have timber protection all around. Some have commenced bearing.

7th. Wilson's strawberry is the best here. I have some cherry trees taken from the roots of an old tree, that are doing well ; some blossomed this year, May 1873.

FOREST TREE CULTURE.

BY GEO. P. PEFFER, PEWAUKEE, WISCONSIN.

In the Pantagraph, (Bloomington, Ill.,) there is an article headed "Forest Preservation," wherein the writer mentions that the government should reserve our woodlands, and only sell the timber, and enact laws to protect it, so that the timber can grow up again for future generations, as our forests in a short time will all be gone, etc., and refers to the European laws on forests. [Please insert the Minnesota or U. S. laws on forest tree planting]. As I have some recollection

about the laws and the reproduction of the European forests, I will give them if this paper should not prove too long.

I think, if our laws are adhered to, they are just right, and if our timber then gets scarce, many a farmer, at least in our section of country, can grow all he needs, and if of a speculative nature, will raise it to sell, and make it profitable, as there is a large quantity of poor and waste lands to be had very cheap, which can be planted or preserved by the owners, and make forest tree timber-growing profitable, which timber will increase in value from year to year, until it is worth as much, or more, than improved farming lands without the timber. If rich land can be afforded to grow timber, all the better, as it will grow faster, and for mechanical purposes will be worth more, as the layers of the new wood growth will be larger and of greater strength than slower grown timber.

But before I get into the details I will remark that fire and cattle have to be kept out for a number of years. On land, either in openings or where the timber has been cut off, or where fire has run over the forest, new seedlings will spring up again naturally, as there are generally live roots and dormant forest seeds left in the ground, which will spring up again; but if nothing of the timber kind should spring up, we have to assist nature and sow the seed of such forest trees as will be best adapted to the soil, and supply the places by artificial means.

For instance, on very poor, sandy lands, where it is rich enough to grow grass, timber seeds will grow; but if the soil is so dry that no grass can grow, it will be an uphill business unless water can be supplied. But on the very poorest land we have seen in this State (nearly dry sand,) the white birch will grow; or on moist sand, tamarack or larch, and if these should get large enough to shade the ground other timber seeds will grow, if sown so as to be in the shade, where they grow naturally. Pines are at home on sandy soil, but to start a pine forest, other tree seeds should be sown and grown to produce the shade required for them. If they are to be grown from the seed, and even where small seedlings are set out, shade they must have.

I have seen all kinds of land and timber lately, on my first visit westward to your State, Minnesota, and was surprised to see so much poor, sandy land between here and there, and also the variations of the soil by the growths of the different kinds of timber, bushes and plants, as we swept along by rail. Some appeared to be so poor that a sheep would starve to death in the month of June in a ten acre lot. Still there was always something growing on the surface, in the wood line,

which could be advantageously cultivated for profit, if not for timber.

The cranberry is at home on low marshes, and grows on land that is wet three-quarters of the year. If that sort of land is improved and drained to some extent, and that crop does not pay, tamarack seeds will grow if the water is drained in early spring, and in a very short time will be a forest, if the fire is kept out. Next we find the whortleberry, or low bush blueberry; next, the high bush black whortleberry; next are willows of various kinds; next, the red swamp birch and alder. On a little drier soil, yellow birch, tamarack or larch, check or pin oak, white birch and black pine. These must have shelter when young. Next we find bur oak, black oak, poplar, hazel, black cherry, and occasionally choke cherry. When we get where there are running streams, and where the wet had kept out the fire and preserved the underbrush and young seedling trees, we find swamp or white elm, black ash, yellow birch, red, sugar and ash-leaf maple, rock and red or slippery elms, and upon places, cottonwood, poplar and butternut; also, white oak, where the land gets better; pitch or Norway pine, and white pine, and in rare places red cedar, and in swamps white cedar, hemlock, balsam, and white and black spruces on a little drier soils.

All these different varieties of wood, trees, bushes and vines can be raised with profit, if a man with a determined mind and good judgment takes it in hand to do so. For instance, to grow forest trees on sandy soils, when there is substance enough to have a covering of grass to hold the ground or sods together, so as to make ridges that will withstand the rains and wind for one season without washing or blowing away by the wind, we shall commence with the seeds of the white birch, as that is about the only tree seed that will stand drift-sands, and washings and drouths. If the ridges are made with the plow or spade they should always be east and west, say from three to five feet apart, and the seedlings will be best always on the north side of these ridges, as a little shade is secured on that side, and as soon as they get well started and a year or two old, so as to make more shade, other varieties of evergreens, tree seeds, and tamarack or European larch, can be sown broadcast.

American larch or tamaracks will do best where quite wet; so will white cedar, balsam fir and hemlock, but the spruces and pines of the different varieties of our native sorts, also the Austrian, Scotch and Rocky Mountain, will do the best on drier and sandy soils; but all the evergreen tree seeds require shade the first two or three years, or until the roots have pen-

etrated deep enough to get moisture to sustain life during the dry and the freezing season.

If there should not be grass enough to hold the ridges required to start the white birches, grass seeds, or weeds, or grain of some kind, might be sown to afford shade enough to get the birch seedlings started. In some parts of Europe, where land had been abandoned for centuries on account of barrenness and drouths, and nothing could be grown on them, the government employed poor laborers and skillful naturalists to direct the laborer, in growing forests again, and they have succeeded in re-wooding and renovating the valleys that had been depopulated. At first, the work was carrying clay on side hills and slopes, and depositing it in holes, and watering to start vegetation and tree seeds, and by following it up year after year have now succeeded in covering the hills with timber and the valleys with fruit and grain; as they have now more dew and rain, and the government gets well paid for the undertaking.

If any one will observe the condition of the land, and is acquainted with the climate, and knows one variety of tree from the other, he soon can have a forest. He must undertake it understandingly, and select varieties suited to the soil. In this part of the State, where there are many openings, many good pieces or young groves of timber are now seen where twenty or twenty-five years ago nothing but prairie grass and hazel bushes, and a few oak grubs were seen; as the fires always burned everything down from year to year until the land was taken up and cultivation began; then the fires ceased. Now, many farmers have their fire-wood just from thinning these groves, and the timber is growing from year to year more profitable.

We saw in some of our newspapers an article going the rounds in which the writer sets down the destruction of our pine forests at seventeen years hence, and the hard wood at a few years later, in this State; but if we should commence planting or caring for our timber lots now, no such fear would be necessary, for any of us here sees the groves of oak of from 20 to 30 years growth, to be quite large already, many trees large enough for fence posts and other purposes.

If agricultural enterprise should be awakened to this subject, and artificial forests should be planted, they would be more profitable, as they grow much faster than the groves already mentioned.

Trees grown for the wood and shelter on rich bottom lands and prairies, will be needed in a short time to assist the new beginner. First of all, the sod has to be broken, or turned up in ridges, east and west, about three to five feet apart, accord-

ing to the size of the plow, and if soft wood is wanted it can be raised from cuttings if they are stuck very early, and the land must either have been made ready late in the fall or early in the spring; but if little seedling trees are planted, and kept back, as in a dormant state, late planting is also successful. They should be stuck or planted close to the north side of the ridge, two to three or four feet apart in the rows, and kept clean of weeds for a few years.

Cottonwood, Lombardy poplar, balm of Gilead, red and white willow, and the like, all grow readily from the cuttings. They should be about eight to twelve inches long, and so stuck that only one eye is above ground, and in a very short time they will be a forest. In the fourth year thinning out has to be begun, and kept up, so as to let sunshine in, or the trees will not thrive, and many would die; but if one-half are cut out in the fourth and fifth year, wood enough can already be saved to do the cooking on any ordinary farm, if the grove is one-eighth of an eighty acre lot, and in a few years more will supply all that is necessary, and if one-twentieth part of the trees should be standing for twenty years enough firewood could be cut, and be of as much value as if the land had been sown with grain, and the cost of raising it deducted.

But as such a lot could be planted with more useful timber, small seedling forest trees should be procured, such as white ash, shell bark hickory, white oak, black oak and butternut, black locust, red elm and the like; also different kinds of maple, all of which would be more valuable than soft wood, and pay a larger profit for the better varieties planted. If these little trees should be planted every third or fourth row, or in every eighth row, and the soft timber cut out from time to time, it would pay still better, as there would be more leaves for mulch, and the hard wood trees would be straighter and better for mechanical purposes. I have in mind a white oak tree standing in a fence corner, and the fields are mostly cultivated, that has gained in twenty years seventeen and a half inches in diameter. A Norway spruce thirteen years planted is twelve inches in diameter, and is thirty-six feet high; a cottonwood twenty-three years from the cutting, six feet from the ground, measures eight feet three inches in circumference; Lombardy poplar, thirteen years from cuttings, is two feet and over, and fifty feet high; black walnut, twenty years the nut planted where it stands, no cultivation, is fifteen inches in diameter. But enough of this.

FOREST TREE CULTURE IN GERMANY.

In my native country (New Bavaria, Germany,) the forests are all owned by village corporations, counties or States,

and foresters are employed by the government for five, ten or twenty years, as the case may be. These men have to see that no damage is done to the growing trees, to see to the new plantations and to the cutting of the old forests; to the gathering of the seeds, whenever it is the proper time to do so; also to take care of them until they are planted. Each forester has to oversee from 500 to 1,000 acres, which is owned and used generation after generation for forest culture. Whenever a piece is cut down (which is decided on by the trustees of the village, county or State, year after year,) the best timber is used for mechanical purposes, and the balance for firewood. All the government officers and public schools and the town poor are furnished a certain amount free. Then, if there is more cut than is needed for the use of the corporation, it is disposed of at public auction.

When the wood is all cleared off, the land is laid off like a village or town, into lots of from one-quarter to one-half an acre, and is sold at auction for the term of three years. The lot with the most stumps on it brings the highest price, as they are all grubbed out for firewood, and by this means the land is subsoiled or trenched. Those that buy for the wood only, sell or lease these lots again to farmers or planters that will raise grain, roots or garden products; and they generally manure very highly the first year, in order to make it more profitable. There are many families that have no property but these lots, and upon them they depend for subsistence.

The third year root crops are grown, and then the lots are again re-planted with forest seeds. If of rich, heavy clay soils, acorns, beach or white ash are planted. If of sandy or light soils, aspen, birch, blue beech or alder seeds are sown and in a few years pines or spruce are sown or transplanted. On the last-named soils, in our district, mostly white oaks were planted, as there was an oak orchard of about 15 to 20 acres, that furnished sufficient acorns annually to plant 1,000 acres. Lands that had ash and birch forests, when cleared off were re-planted with oak and beech, and that of the oak with ash, beech, or any sort that had not been grown on them before.

The nursery of new plantations were planted by the taxpayers or burghers, the same as our road taxes are worked here, and the forester is the overseer. As before stated, the land for the new plantation had for the last crop roots, such as potatoes, beets and turnips in rows, and the furrows left after gathering the crop in the fall were used early in the spring to plant the acorns or other seeds in. If too shallow, the hoe was used to make furrows, and the seeds covered one or two inches deep. After the seed had come up, and were a

a good stand, some of the poor people were permitted to grow a row of potatoes or bush-beans between them, for the purpose of keeping the tree rows clean of weeds and to transplant the little plants where they had failed. The second year no cultivation is done, except to keep the large weeds and grass out. On sandy land evergreens are set out, if there are vacancies.

After the second year all is left to nature. No grass, weeds, or dead forest leaves are allowed to be taken off from the new plantations for at least five or six years, when the first thinning is gone through with, and all crooked, deformed and dry trees removed, all in a day or two. This is about the only time the forester must have help to oversee, so that none are cut that will be of other use than firewood. As it belongs to the burghers to do this job, there is generally a large crowd, as all turn out that can on this occasion. After a day or two no one is allowed to cut or trim wood or brush for the next two or more years. In the older plantations it is allowable to get the dry limbs and sticks, and the limbs that grow downwards, or interfere with each other. In this way many people have to obtain their firewood, particularly those that are not on the town poor list, as they are not able to purchase it; or if they do buy, do so to have it in cold weather, when the women and children cannot go out to gather it.

I suppose many of you wonder why the Germans from villages or small towns carry their loads on their heads, and why they gather dry brush around their homes in this country. It is because they have been accustomed to it from childhood; and they can make a quick fire and cook a meal of victuals while they set the table.

There are heavy fines and imprisonment imposed for cutting down or girdling or removing little trees or dry leaves from any of the groves, without permission from the forester or trustees, and many a forester has been maimed and sometimes killed in attempting to arrest parties trespassing on these forests.

In old evergreen forests the large trees only are removed, and if large vacancies occur, burghers have to make ridges with grub hoe and spade and remove the surface soil, leaves and rubbish into small piles, when evergreen seeds are sown broadcast and left alone, as these places are mostly shaded. They will nearly all be covered with young plants, and grow up again for future generations.

TRANSACTIONS
OF THE
MINNESOTA
STATE HORTICULTURAL SOCIETY,

PROCEEDINGS, ESSAYS, AND REPORTS

AT THE SUMMER MEETING,

HELD AT THE

STATE UNIVERSITY, JUNE 30th, 1878,

AND AT THE

ANNUAL WINTER MEETING,

HELD AT

Winona, January 18th, 19th & 20th, 1876,

TOGETHER WITH

APPENDICES CONTAINING ESSAYS, REPORTS, OBITUARIES,
AND OTHER PAPERS ON MISCELLANEOUS SUBJECTS.

Prepared by CHAS. Y. LACY, Secretary.

ST. PAUL:
THE PIONEER-PRESS COMPANY.
1878.

CONTENTS.

	PAGE.
List of officers for 1876.....	9
Standing Committees.....	9
Local and County Horticultural Societies.....	12
List of members.....	13
Honorary members.....	14
<i>Proceedings of Summer Meeting</i>	15
Visit to University Farm.....	15
Strawberries, Essay on, by Col. J. H. Stevens.....	18
Strawberries, Discussion on.....	18
Cultivation.....	18
Mulching.....	19
Varieties.....	19
Varieties recommended.....	20
Flowers, Essay on, by Rev. J. H. Tuttle.....	21
Discussion on.....	25
Roses.....	25
Pansies.....	25
Meeting Pomological Society.....	26
Life membership.....	26
Currants, Discussion on.....	26
Pruning.....	26
Varieties.....	27
Raspberries, Discussion on.....	27
Varieties.....	27
Varieties recommended.....	28
Articles on exhibition at Summer Meeting.....	29
<i>Proceedings at the Winter Meeting</i>	30
Appointment of Committees.....	31
On Centennial.....	32
On Cataloguing Fruits.....	32
On Agricultural College Farm.....	33
On Finance.....	33
Roots for market, Paper on, by P. C. Sherren.....	33
Onions.....	33
Soil and Care.....	33
Varieties.....	33
Cabbages.....	34
Parsnips and Carrots.....	34
Beets.....	34
Roots for Stock.....	34

IV

ANNUAL REPORT.

	PAGE.
Floriculture, Report on, by Mrs. Van Cleve.....	35
Floriculture, Discussion on.....	37
Varieties for Cultivation.....	37
Roses.....	38
Bulbs.....	38
Shrubs.....	38
Bedding Plants.....	38
Preservation of Plants.....	38
More Varieties.....	39
Hybrid Perpetual Roses.....	39
Horticulture in Anoka County, Report on, by Lewis Martin.....	40
Climate.....	40
The Hard Winter.....	40
Wealthy.....	40
Duchess.....	41
Prospects.....	41
Causes of Injury.....	41
Transcendent.....	41
Planting.....	42
Pears, Plums and Cherries.....	42
Small Fruits and Grapes.....	42
Recommending Varieties.....	42
Horticulture in Anoka County.....	69
Discussion on.....	69
Pomological Society, Report on Meeting of, by Wyman Elliot.....	43
Apples.....	43
Pears.....	43
Plums.....	43
Grapes.....	44
Peaches and Blackberries.....	44
Discussions.....	44
Awards.....	44
Resolutions.....	44
South Park.....	45
Minnesota's Display.....	45
Exhibition in 1876.....	46
Pomological Society, Discussion on Report.....	47
Horticulture in Southeastern Minnesota, Report on, by J. S. Harris...	48
Authority.....	48
Adaptation.....	48
Before settlement.....	48
First Planting.....	48
Winter of 1872-3.....	49
Winter of 1874-5.....	49
Pears.....	49
Strawberries.....	49
Raspberries.....	50
Currants.....	50
Cherries.....	50

	PAGE.
Plums.....	50
Grapes.....	50
New Fruits.....	50
Flowers.....	51
Insects in 1875.....	51
White Grub.....	51
Borers.....	51
Codling Moth.....	51
Beetles.....	51
Grape Worm.....	51
Lists of Fruits.....	52
Horticulture in Southeastern Minnesota, Discussion on Report.....	52
Turner Raspberry.....	52
Hart's Seedling Strawberry.....	53
Strawberry Cultivation, Essay on, by Seth H. Kenney.....	53
Merits of Strawberry.....	54
Age of Plants to set.....	54
Preparation of the soil.....	54
Time to plant..	54
The Ida.....	54
Time to Cultivate.....	55
Time of Ripening.....	55
Varieties.....	55
Hills or Matted Rows	56
Time to Mulch.....	57
Crop of Plants.....	57
Receipts.....	57
Best Varieties.....	57
Soil.....	58
Strawberry Cultivation, Discussion on.....	58
Varieties.....	58
Varieties recommended.....	59
Hart's Seedling.....	60
The Normal School.....	60
Fruit Statistics.....	61
Plums, Paper on, by J. W. Boxell.....	61
Procuring Trees.....	61
Cultivation.....	62
Propagation	62
Improvement.....	62
Black Knot.....	62
Uses.....	63
Plums, Discussion on.....	63
Black Knot.....	63
Keeping Roots..	63
Miner.....	64
De Soto.....	66
Natives	66
Varieties recommended.....	67

	PAGE.
Methods of Propagation, Paper on, by A. Stewart.....	68
Adaptation of Varieties.....	68
Root-Killing.....	68
Prevention.....	68
Methods of Propagation, Discussion on.....	69
Crab stocks.....	69
Cause of Injury in '72-3.....	69
Deep Planting.....	71
Depth to Plant.....	72
Crab Roots.....	72
Root-killing elsewhere.....	73
Blight.....	73
Better than Transcendent.....	74
Adaptation to Crab Roots.....	74
Agricultural College Farm, Report on by J. S. Harris.	74
The University.....	75
Agricultural Department.....	75
Farm.....	75
Garden.....	75
Nursery.....	76
Garden Vegetables, Report on, by W. T. Scott.....	77
Horticultural Literature.....	77
Object.....	77
Statistics.....	77
Transplanting.....	77
Peas.....	78
Crossing, and Selection of Seeds.....	78
Potatoes.....	78
Bush Beans.....	79
Pole Beans.....	79
Cabbages.....	79
Sweet Corn.....	79
Onions.....	79
Squashes.....	79
Tomatoes.....	80
Sweet Potatoes.....	80
Cauliflower.....	80
Celery.....	80
Egg Plant.....	80
Lettuce.....	80
Beets.....	80
Melons.....	80
Special Fertilizers.....	80
Garden Vegetables, Discussion on.....	81
Cutting Potatoes.....	81
Early Tomatoes.....	81
Varieties of Potatoes and Peas.....	82
Lima Beans.....	82
Etna Bean.....	83

	PAGE.
Transplanting.....	83
Asparagus and Cauliflower.....	83
Horticulture in Meeker County, Report on, by G. W. Fuller.....	85
The Hard Winter.....	85
Notes on Varieties.....	85
Small Fruits.....	85
Blight.....	85
Borer.....	86
Horticulture in Winona County, Report on, by W. K. Bates.....	86
Prospects.....	86
Varieties.....	86
Hart's Seedling.....	86
Grapes.....	87
Pears.....	87
Faith in the Future.....	87
Annual Address by President Smith.....	87
Our Purposes.....	87
Our Calling.....	88
Flowers.....	89
Fruits and Vegetables.....	89
Be Cautious.....	90
Agricultural Society.....	90
Obituary.....	90
1875.....	91
State University.....	91
Progress.....	92
Annual Address, Discussion on.....	92
Summer Meeting.....	92
In Memoriam.....	93
Floriculture, Report on, by J. E. Booth.....	93
Window Gardening.....	94
Watering.....	94
Soils and Potting.....	95
Lists of Flowers for Cultivation.....	95
Bulbs.....	95
Raspberries, Paper on, by J. T. Grimes.....	96
Varieties.....	97
Varieties to plant and time to plant.....	98
Soil and Location.....	99
Cultivation and Protection.....	99
Pruning.....	99
Marketing, &c.....	99
The Birds.....	100
Raspberries, Discussion on.....	101
Yields.....	101
Training.....	102
Blackberries.....	102
Secretary's Report.....	103
Special Apple Premiums.....	103

	PAGE.
Summer Meeting.....	103
Business Transacted.....	104
Library.....	104
Expenses.....	105
Treasurer's Report.....	105
Election of Officers.....	106
New Siberians and Hybrids, Paper on, by P. A. Jewell.....	107
New Siberians and Hybrids, Discussion on.....	110
Receipts from Transcendent and Hyslop.....	110
Early Strawberry.....	110
Last Year's List.....	111
Varieties Recommended.....	111
Apples, Discussion on.....	112
Saxton.....	112
Duchess and Wealthy.....	112
Melinda.....	112
Test for Varieties.....	113
Tetofsky.....	114
Stewart's Sweet.....	114
Haas.....	114
Price's Sweet.....	114
Saxton.....	114
Fameuse and Plumb's Cider.....	115
Walbridge.....	115
St. Lawrence.....	115
Utter's Red, Talman's Sweet, and Alaska.....	115
Red Astrachan.....	115
White Astrachan.....	116
Peach Apple.....	116
List Recommended.....	116
Winter Fruit, Paper on by A. W. Sias.....	117
Winter Fruit, Discussion on.....	119
History and Characteristics of Varieties.....	119
Centennial Business Arrangements.....	120
Committee on Final Resolutions.....	121
Insect Enemies.....	121
Twig Pruner.....	121
Beetle in the Apple.....	121
Borer.....	121
Grape Curculio.....	121
Grape Borer.....	122
Summer Meeting.....	122
Communications, &c.....	122
Co-operation of County Societies, Discussion on.....	122
Olmsted County.....	123
Winona County.....	123
Pear Culture, Report and Discussion on.....	123
Celery, Paper on, by W. E. Brimhall.....	125
Seed and Varieties.....	125

	PAGE.
Sowing.....	125
Transplanting.....	126
Soil and Preparation.....	126
Planting out.....	126
Cultivation.....	126
Securing.....	127
Preservation.....	127
Celery, Discussion on.....	127
Blight, Discussion on.....	128
Lime.....	128
Root Pruning.....	128
Grounds for Public Buildings, Resolutions on.....	128
Evergreens, Discussion on.....	130
Norway Spruce.....	131
White Spruce.....	131
Scotch Pine.....	132
Austrian Pine.....	132
White Pine.....	132
American Arbor Vitae.....	132
Red Cedar.....	132
Red or Norway Pine.....	133
Irish Juniper.....	133
Hemlock Spruce.....	133
Mountain Pine.....	133
Siberian Arbor Vitae.....	133
Black Spruce.....	133
Trailing Juniper.....	134
List Recommended.....	134
Protection of Apple Trees, Discussion on.....	134
Next Annual Meeting.....	135
Final Resolutions.....	135
Bill of Secretary.....	136
Articles on Exhibition.....	136
Appendix A, Obituary, Capt. Wm. Paist.....	141
Appendix B, Reports of Members of General Fruit Committee.....	143
Small Fruits, Wyman Elliot.....	143
Small Fruits, J. I. Salter.....	146
Small Fruits, J. S. Harris.....	148
W. K. Bates.....	148
G. J. Hoffman.....	150
O. D. Storrs.....	152
L. D. Mills.....	154
Appendix C, Reports, Papers and Essays.....	156
Report on Entomology, by R. J. Mendenhall.....	156
Paper on Orchard Protection, by H. M. Thompson.....	159
Paper on Cranberry Cultivation in Rice County, by O. F. Brand.....	164
Paper on Potatoes, by Wm. E. Brimhall.....	166
Paper on the Transcendent, by Wm. E. Brimhall.....	167
Paper on Planting Fruit Trees, by O. F. Brand.....	167

	PAGE.
Appendix D. Abstracts from the Reports of County and Local Horti- cultural Societies.....	170
Olmsted County.....	170
German Horticultural Society of Ramsey county.....	175
Rice County Horticultural Society.....	176
Appendix E. Descriptions of New Varieties of Fruit.....	177

LIST OF OFFICERS FOR 1876.

PRESIDENT :

TRUMAN M. SMITH.....St. Paul.

VICE PRESIDENTS :

E. H. S. DARTT, First District.....Owatonna.

T. G. CARTER, Second DistrictSt. Peter.

J. T. GRIMES, Third DistrictMinneapolis.

SECRETARY :

CHAS. Y. LACY.....Minneapolis, E.

TREASURER :

A. W. SIASRochester.

STANDING COMMITTEES.

EXECUTIVE :

HON. NORMAN BUCK, Chairman.....Winona.

WYMAN ELLIOT.....Minneapolis.

P. A. JEWELL.....Lake City.

O. F. BRAND.....Faribault.

J. S. HARRIS.....La Crescent.

ON ENTOMOLOGY :

HON. B. J. MENDENHALL.....Minneapolis.

J. S. HARRIS.....La Crescent.

WYMAN ELLIOT.....Minneapolis.

ANNUAL REPORT.

ON FLOWERS AND FLORICULTURE:

C. M. LORING.....Minneapolis.
 WM. KING.....St. Paul.
 PROF. W. F. PHELPS.....Winona.

ON VEGETABLES AND MARKET GARDENS:

J. T. GRIMES.....Minneapolis.
 W. E. BRIMHALL.....St. Paul.
 M. PEARCE.....Rochester.

ON TREES FOR THE FOREST AND FOREST CULTURE.

L. B. HODGES St. Paul.
 A. STEWART.....Richfield.
 E. H. S. DARTT.....Owatonna.

PERMANENT COMMITTEE ON OBITUARIES.

COL. J. H. STEVENS.....Minneapolis.
 HON. C. M. LORING.....Minneapolis.
 GEN. LEVI NUTTING.....Faribault.

COMMITTEE ON CATALOGUING FRUITS, SHADE AND ORNAMENTAL TREES AND PLANTS.

P. A. JEWELL.....Lake City.
 WYMAN ELLIOT.....Minneapolis.
 A. W. SIAS Rochester.

COMMITTEE ON AGRICULTURAL COLLEGE.

COL. J. H. STEVENS.....Minneapolis.
 E. H. S. DARTTOwatonna.
 WM. CANNON.....Bismarck, D. T.

COMMITTEE ON FINANCE:

C. M. LORING Minneapolis.
 NORMAN BUCK.....Winona.
 A. W. SIAS.....Rochester.

For Committee to solicit and collect fruits for the Centennial Exhibition
 see p. 32.

GENERAL FRUIT.

J. W. BOXELL	Washington Co.
M. C. BUNNELL	Houston Co.
R. SCHIFFMAN	Ramsey Co.
F. G. GOULD	Hennepin Co.
O. F. BRAND	Rice Co.
T. G. CARTER	Nicollet Co.
E. H. S. DARTT	Steele Co.
GEO. H. FISH	Stearns Co.
M. J. HOAG	Olmsted Co.
G. W. FULLER	Meeker Co.
GORHAM POWERS	Yel. Med. Co.
J. S. BROCKELHURST	Mille Lacs Co.
L. D. MILLS	Blue Earth Co.

LOCAL AND COUNTY HORTICULTURAL SOCIETIES.

RAMSEY COUNTY GERMAN HORTICULTURAL SOCIETY.

J. C. FLEISCHER, St. Paul.....President.
_____, _____.....Secretary.

OLMSTED COUNTY HORTICULTURAL SOCIETY.

M. W. LELAND, _____.....President.
S. D. HILLMAN, Rochester.....Secretary.

NICOLLET COUNTY HORTICULTURAL SOCIETY.

ORGANIZED MARCH 9TH, 1876, WITH 12 MEMBERS.

ERNEST MEYER, St. Peter.....President.
T. G. CARTER, St. Peter.....Secretary.

LIST OF MEMBERS.

Adams, L. T.....	Hokah, Houston county.
Boxell, J. W.....	Afton, Washington county.
Bower, Thomas.....	St. Paul, Ramsey county.
Booth, J. E.....	Minneapolis, Hennepin county.
Buck, Hon. N.....	Winona, Winona county.
Bunnell, M. C.....	Money Creek, Houston county.
Brand, O. F.....	Faribault, Rice county.
Bates, W. K.....	Stockton, Winona county.
Baker, D. A. J.....	St. Paul, Ramsey county.
Brackett, Geo. A.....	Minneapolis, Hennepin county.
Brainard, H. J.....	St. Paul, Ramsey county.
Cannon, Wm.....	Bismarck, D. T.
Carter, T. G.....	St. Peter, Nicollet county.
Clark, Geo. W.....	Winona, Winona county.
Cook, M. S.....	Maple Plain, Hennepin county.
Cameron, G. W.....	Dundas, Rice county.
Dartt, E. H. S.....	Owatonna, Steele county.
Elliot, Wyman.....	Minneapolis, Hennepin county.
Fish, Geo. H... ..	Sauk Center, Stearns county.
Fowler, Wm.....	Newport, Washington county.
Fleischer, J. C.....	St. Paul, Ramsey county.
Grimes, J. T.....	Minneapolis, Hennepin county.
Gould, F. G.....	Excelsior, Hennepin county.
Hart, John.....	Winona, Winona county.
Hackett, Geo.....	Money Creek, Houston county.
Harris, J. S.....	La Crescent, Houston county.
Hoag, M. J.....	Rochester, Olmsted county.
Hewitt, Dr. A. W.....	Kenyon, Goodhue county.
Hoyt, Lorenzo.....	St. Paul, Ramsey county.
Hodges, L. B.....	St. Paul, Ramsey county.
Jewell, Dr. P. A.....	Lake City, Wabasha county.
Jordon, E. B.....	Rochester, Olmsted county.
Judson, R. C.	Farmington, Dakota county.
Lacy, Prof. Chas. Y.....	Minneapolis, Hennepin county.
Loring, Hon C. M.....	Minneapolis, Hennepin county.
Morey, Prof. Chas. A.....	Winona, Winona county.

Matthews, B. A.....	Knoxville, Iowa.
McKellup, C. D.....	Faribault, Rice county.
Mendenhall, Hon. R. J.....	Minneapolis, Hennepin county.
Pearce, M.....	Rochester, Olmsted county.
Phelps, Prof. W. F.....	Winona, Winona county.
Phillips, A. J.....	West Salem, Wis.
Rollins, I. W.....	Elgin, Wabasha county.
Stevens, Col. J. H.....	Minneapolis, Hennepin county.
Smith, Truman M.....	St. Paul, Ramsey county.
Stewart, A.....	Richfield, Hennepin county.
Scott, W. T.....	Minneapolis, Hennepin county.
Somerville, Wm.....	Rochester, Olmsted county.
Sias, A. W.....	Rochester, Olmsted county.
Schiffman, Dr. R.....	St. Paul, Ramsey county.
Thompson, Josiah.....	Minneapolis, Hennepin county.
Theopold, F. A.....	Faribault, Rice county.
Train, Dr. H. B.....	Hokah, Houston county.
Uline, C. S.....	St. Paul, Ramsey county.
Wachlin, Wm.....	Faribault, Rice county.
Wilcox, E.....	Trempealeau, Wis.

HONORARY MEMBERS.

Geo. Peffer.....	Pewaukee, Wis.
A. G. Tuttle.....	Baraboo, Wis.
O. S. Willey.....	Madison, Wis.
Hon. Wm. W. Folwell.....	Minneapolis, Minn.

LIFE MEMBERS.

Mrs. Wm. Paist.....	St. Paul, Minn.
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TRANSACTIONS
OF THE
MINNESOTA STATE HORTICULTURAL
SOCIETY.

PROCEEDINGS OF THE SUMMER MEETING HELD AT THE UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINN., JUNE 30TH, 1875.

Pursuant to notice given through the public press a meeting of the Society was held at the State University in Minneapolis East, June 30th, 1875.

The meeting was called to order by President Smith at 9:25 A. M.

Appointment of Committees.

The appointment of committees being first in order, on motion the President appointed the following :

A committee to report at the next winter meeting of the Society on the condition of the Agricultural College Farm. J. S. Harris, D. A. J. Baker, and Col. J. H. Stevens, were appointed, and on motion of Judge Baker, Wm. Fowler, President of the State Agricultural Society, was added.

A committee to report on the articles on exhibition in the hall consisting of C. M. Loring, Wyman Elliot and Mrs. W. E. Brimhall, was appointed.

Visit to University Farm.

* A recess for the arrangement of articles on exhibition was then taken, at the end of which a visit was made to the Agricultural College Farm, which is located about one mile east of the University.

The following is a brief enumeration of what was seen growing :

By way of preface we should remark that the farm lies on either side of University avenue, about one half mile east of the University; that it consists of about 120 acres, of which by far the larger portion is so wet as to produce only hay, while the smaller portion, under cultivation, is of a sandy nature, and much reduced by continued cropping without manure. Under these conditions the results attained and likely to be attained, reflect no discredit on those having the farm in charge.

Entering the part of the farm lying north of the avenue, we found the plat here under cultivation divided into four sections by three alleys for passage of teams. Entering the first alley we found upon the right first two varieties of cauliflower, followed by a quarter acre of onions from the seed. These were mainly of the large red variety, but included also five other varieties for experiment. Then came two varieties of parsnips, stunted and hollow crowned, of which the former made the best show, probably because the seed germinated better. Next were two rows of beds containing five varieties of lettuce and the same of radishes, besides spinach, onions from sets, and other vegetables. Some of the lettuce showed the heading peculiarity so as to look like miniature heads of cabbage. Then follow a row of salsify and four varieties of carrots, some designed for table use and some for feeding purposes. Next we see four varieties of garden turnips, followed by specimens of kohlrabi, Brussels sprouts, herbs, Swiss chard, broccoli, peppers and egg plants. Last upon the right hand side we find one of eight varieties of garden sweet corn, which have been planted in various places, as much removed from each other as possible to prevent mixing. Some eight varieties of squashes were distributed in a similar manner for the same reason. On the left of this alley were first six varieties of late cabbage, covering about one-half acre. Then came two rows of celery, comprising five varieties. This was followed by five varieties of garden beets. Next came three-eighths of an acre of tomatoes, comprising seven varieties. These are succeeded by sweet potatoes one-quarter acre, and cucumbers one-eighth acre, and last, on the left of this alley, twenty-three varieties of peas. Some of these varieties of peas, but recently given to the public, promise to surpass in earliness, productiveness and flavor, some of the older and better known varieties grown side by side. Here, also, was tried an experiment with different kinds of fertilizers. Guano, bone flour and superphosphate of lime and animal fertilizer were applied on adjoining rows of early Kent peas. The results thus far have been plainly in favor of the guano, the animal fertilizer standing second.

Turning to the left and returning in the third alley, we meet on the left with the most marked failure yet experienced, viz., in the germination of forest-tree seeds. Of the kinds sown about one-half germinated. These were ash-leaved maple or box elder, honey locust, Kentucky coffee tree, green ash, allanhus, Norway spruce and white pine. Next we come to the potatoes planted for crop purposes, comprising about three-quarters of an acre, and consisting chiefly of early rose, with a few early favorite and peerless. After these come thirteen varieties of potatoes planted for the purpose of comparing their yields, quality and characteristics. Then follow seven varieties of pole beans, some Chinese sugar cane, five varieties of early cabbage, and lastly nine varieties of dwarf beans. On the

right of this alley we found first some soft maples just coming up, then eight kinds of fertilizer, including compost of stable manure, applied on adjoining rows of early rose potatoes. These were followed by six kinds mangolds and sugar beets, and these in turn by dent corn for crop. We could see no attempt at what may be called "fancy" farming. Everything seemed to aim at utility. Not the greatest amount of money value, but the greatest amount of material for instruction and the greatest amount of information.

Leaving the north side of the avenue and entering that part lying on the south side opposite the barn we found first on the right eight plats of white dent corn, each manured with a different fertilizer. So far as could be judged from present appearances that which had received compost for stable manure would yield better than several other plats. That manured with ashes did not come up well, which was attributed to the ashes injuring the germinating power, as the ashes were simply scattered in the hill and the corn dropped directly upon them. The plat manured with Peruvian guano showed better than all others, except perhaps that manured with compost. The animal fertilizer produced effects inferior only to these two, while superphosphate of lime showed a slight superiority over the bone flour. Passing these experiments with the fertilizers we came to the orchard, which was set the past spring, and which shows but very few trees that have failed to grow. It contains over 200 trees, many of which were donated for trial by nurserymen and fruit-growers of the State. Of crab-apples there are seventeen varieties; apples, thirty-four varieties; plums, seven varieties, and cherries, four varieties.

Passing through the orchard we came to the small grain experiments. For these, poor soil was purposely chosen, in order that the effect of the soil should not overshadow and cover up the effects of the fertilizers and peculiarities of the different varieties. Great care was taken to select land of uniform character, and to secure the same conditions for the different plats compared with each other. First, were five plats sown with five different varieties of wheat, and the sixth with a mixture of these. One of these plats is fine wheat, and with it the others are to be compared. On the seventh plat is sown wheat received from Department of Agriculture. On the eighth a mixture of wheat, barley and oats. The ninth and tenth are sown with fine wheat, one at the rate of seventy-two pounds per acre, and the other at the rate of one hundred pounds per acre. Then follow five plats of fine wheat, dressed with different fertilizers, one being left without manure. This plat shows a perceptible inferiority. Next are six varieties of oats, and lastly some spring rye, without manure.

Returning by another path we came upon fifty or sixty grape vines comprising some thirteen varieties. Some corn, planted for crop purposes showed a good many vacant hills, the gophers having stolen the seed. Thirty-nine plats, each one rod square and sown with clovers, grasses and mixtures of grasses, next met our view, but their peculiarities were pretty effectually concealed by the dense growth of weeds which had come with them and which could not be removed without destroying the grasses. Beyond this lay a plat of winter rye, sown the 10th of last November. The seed did not sprout and scarcely swelled until this spring, but now it stands about five feet high and well headed. Passing up the north side of this we

passed some Sanford corn, Hubbard squashes and five varieties of field beans, and then came upon the fruit garden, where had been set out three varieties blackberries, nine varieties raspberries, eleven varieties currants, one variety gooseberry and eight varieties strawberries. Then we met some fine looking corn, called by its improver, Mr. W. T. Scott, foreman of the farm, State Farm Yellow Dent. About ten varieties of field corn are growing in different locations upon the farm. Many of these, however, are represented by only a few hills or rows, while others that have given promise of value in the past are planted in larger quantity.

West of this corn were set the grafts of ten or twelve varieties of apples and crabs procured from the extreme northern part of Vermont. Next we came to the nursery containing elms, maples, larch, pines, spruce, &c. The pines here showed the blasting effects of last winter, as they do elsewhere. We must not forget to mention the Russian apple trees set out by Colonel Robertson several years ago. These stand on sandy soil and appear to be doing well. It was noticed that while the grafted growth was unimpaired last winter, whatever branches had grown up from the stock were partly or entirely killed.

The survey of the farm was quite too hasty to permit of many questions or criticisms. Several of the party, however, ventured the opinion that a large quantity of manure was needed to bring the farm up to a highly productive state. It is worthy of remark that this great variety of seeds and plants has been planted and cared for with a very small amount of labor. Less than an average of two hands besides the foreman have done all the labor of preparing the soil, planting, manuring in the hill and row, cultivating, hoeing, etc., and this where the nicest care was required in every operation. Having completed their hasty visit to the University farm, the party returned to the University, where the remainder of the programme of the meeting was carried out.

Col. Stevens then read his essay on strawberries, after which a vote of thanks was tendered and a copy requested for publication in the Transactions.

[Col. Stevens has not been able to furnish a copy for publication.—Sec'y.]

DISCUSSION.

Cultivation.

The question was asked if wild strawberry plants would not produce as good berries as the tame ones if cultivated as well.

Mr. Harris:—The berries of wild plants brought under cultivation are not as large as those of the tame plants left uncultivated. Have a bed of Downer's Prolific 12 years old that now gives better berries than the new beds. The Wilson, if cultivated before the fruit ripens, develops the seeds more prominently. Would culti-

vate thoroughly after the crop is gathered, and pull the weeds, spading if necessary, early in the spring; then mulch and let alone.

Mr. Elliot:—Would cultivate when newly set out, but cultivation while bearing tends to produce knotty, seedy berries.

Mulching.

Mr. Tuttle inquired of Mr. Elliot concerning same berries thoroughly mulched with straw, and was informed that they did well.

Mr. Baker:—Have cultivated the Wilson in beds successfully.

Mr. Harris:—Have seen berries mulched with hop vines that did much better than those mulched with straw, as the hop vines were more open.

Varieties.

Mr. Abernethy:—Is not the Wilson the poorest berry we have? It is flavorless, sour and dry. The Green Prolific is much better.

Mr. Elliot:—You must be giving the characteristics of the green berries.

Mr. Harris moved to recommend the Wilson to the horticulturists of Minnesota as the best strawberry for market.

Mr. Baker:—I would add the words "and for use." It is the poor man's strawberry, and will grow most anywhere.

Mr. Smith:—Have had most experience with the Wilson. The Charles Downing, however, brought one-quarter more in the St. Paul market last year. The Green Prolific is a good berry, but softer than the Downing; good to run down weeds, but will sink one-half if left in the baskets over night.

Mr. Brimhall:—The Wilson keeps the best and freshest, but the Downing is the best eating. It brings one-fourth more than the Wilson, and is best for family use.

Mr. Harris:—I like the Wilson for market, because when I get there I want to know what I have, whether berries or jam.

The motion to recommend the Wilson, as above, was carried.

Mr. Abernethy moved that the society recommend Charles Downing and Green Prolific for garden cultivation or home use.

At this point a recess was taken for lunch, furnished by the Regents of the University, in an adjoining room.

AFTERNOON.

Meeting was called to order at 1:30.

The motion to recommend Charles Downing and Green Prolific was referred to a committee consisting of Messrs. Abernethy, Elliot and Harris, who presently reported, favoring a recommendation by the society for general cultivation by amateurs of the Charles Downing late and prolific; Downer's Prolific, medium early and prolific; Triomphe de Gand for large berries and fine flavor; Brooklyn Scarlet for flavor.

The report was accepted and adopted.

Varieties Recommended.

The action of the Society on strawberries was therefore as follows:

Recommended for general cultivation for market:

Wilson's Albany.

Recommended for general cultivation by amateurs:

Charles Downing, late and prolific.

Downer's Prolific, medium early and Prolific.

Triomphe de Gand, for large berries and fine flavor.

Brooklyn Scarlet, for flavor.

Obituaries.

Judge Baker moved the appointment of a permanent committee on obituaries, this committee to consist of Messrs. Stevens, Loring and Nutting. Motion carried.

Transactions.

Here followed a discussion on the report of the Secretary of the Society for last year. Mr. Loring moved the appointment of a committee to wait upon the Secretary of last year and request his notes of the proceedings of the Society to be published in the Transactions of the Society. Motion carried, and Mr. C. M. Loring appointed.

Flowers.

Rev. Mr. Tuttle then read his essay on Flowers.

The essay was accepted, the thanks of the Society tendered, and a copy requested for publication in the Transactions.

The following is the essay :

It can be said of flowers, but scarcely of any other thing, that they are universally admired. Human nature naturally varies so much, and education diversifies it so much more, there are few objects in this world which affect us all alike—which affect us all in any degree. Music appeals to a popular chord, but persons are found who do not care to hear it, and a small number who have a positive aversion to it, but who ever knew an individual, civilized or savage, cultivated or uncultivated, good or bad, who did not display more or less fondness for flowers? Did the man or woman ever live who hated flowers? If not, what better proof do we need that flowers answer a common want and come nearer the soul of man than any other material thing—that they are almost as much a necessity as the air we breathe. Some persons take especial enjoyment in mountain scenery, others prefer wide stretching prairie; some would have their home enveloped in thick clumps of trees, while others would have a green lawn and open sunlight; but no one asks for field, or forest, for glen or garden, for hill sides or river banks, for private laws or public parks, where flowers do not grow. Whatever else we have flowers must complete its beauty. Beecher said: "Flowers are the sweetest things God ever made and forgot to put a soul into." But are we sure God did not put a soul into them. Richter, than whom no man ever had a keener insight for nature, quotes Undine as saying:

"I once fancied a paradise for the spirits of departed flowers."

The very name of *Pansy* suggests a human quality. "Look," says the poet Read:

"Look how the blue-eyed violets glance love to one another."

Longfellow writes:

"How like they are to human beings."

Flowers possess a universal fitness for

Symbols of Sentiment.

There is no time or place when flowers are inappropriate, no decoration to which they cannot add a charm. They lend fragrance and beauty to homes of joy and to homes of sorrow. The bride who wore orange blossoms on her wedding day, when dead has her coffin wreathed with immortelles. Flowers may tell our love for the living, and our mourning for those who have passed away. With equal fitness they adorn the cradle and grave—the portals of life and the portals of Heaven. There is no private meeting of friends, no public meeting of friends, no public festival, nor anniversary of any kind, no birth, no baptism, or religious ordination, which they may not embellish or grace with some sentiment. They appear

in the church, in public halls, in shop windows, in porticos and on balconies; they wind about columns, cover old walls, light up front lawns, decorate schoolrooms: they are worn as ornaments for the person; they make crowns for children and chaplets for heroes; and our nation could find no more delicate, genuine way of expressing its gratitude for the soldiers who perished in the late war than by covering the places where they sleep with flowers. Here the odor of roses succeeds the smoke of battle; violets and lilies heal the wound of war, while they deck the brow of remembered patriotism. It is said that the cupid of the ancient Hindoos tipped his arrows with flowers. This young god of love lives everywhere and always dwells amid flowers, lives on their breath, and reflects their colors from his eyes and lips. Says a certain writer: "The instinctive and universal taste of mankind selects flowers for the expression of its finest sympathies, their beauty and their fleetingness serving to make them the most fitting symbols of those delicate sentiments for which language itself seems almost too gross a medium."

Park Benjamin says: "Flowers are love's truest language." He might have said they are a medium for all our thoughts and feelings. If language were abolished, these silent tongues of the field and garden might be used to reveal us to one another.

Flowers seem to be equally

"Adapted to the young and to the old."

Emerson has written that "Flowers belong so strictly to youth that we adult men soon come to feel that their beautiful generations concern us; we have had our way; now let the children have theirs." As this New England sage is generally so clear in his judgment, I am more astonished at his willingness to give up flowers to children, for what among earthly things does old age require or desire more. There are some things which we must grow up to before we can be interested in them; and there are also some things which, although they please us for awhile, we finally outgrow, but children, as soon as they love anything, love flowers; and old people, whose hairs Solomon compared to the white blossoms of the almond, love them equally well. The odor of the garden delights him who bowed with years, treads slowly the winding paths there, no less than the airy-footed boy who trips about with almost the ease and swiftness of the humming bird.

Flowers are welcome and are

Sought for at all Seasons.

They brighten the morning and gladden the evening; their fragrance sweetens the noonday air and the darkness of night. There are many objects which we love to have about us in summer we can readily spare in winter—which, indeed, seem out of place in winter. Food that is enjoyable to the taste in warm weather we refuse in cold weather. Certain amusements cease to attract us beyond certain months; many of our feelings and moods come and go with the sun, with the spring and with the autumn, but our admiration for flowers seems not to be modified by either heat or cold, by south winds or north winds. If there be any dif-

ference our heart warms for them in proportion as the earth cools. As soon as the frost comes we make every effort to transfer the garden to the house, and put our vines and plants inside our home windows instead of outside. In this way we keep the summer, or a pleasant bit of it, always in sight, and bid defiance to the snow storms.

To supply this boundless need and to gratify this universal love for flowers,

God has Covered the whole Earth with them.

Flowers grow everywhere. There is no soil too rich nor too poor for them. What traveler ever found a flowerless country? If we visit Italy, Egypt, Syria and Greece, the people seem foreign and strange, but many of the flowers are familiar like those we have seen all our lives at home. The lilies of Palestine wear the same soft and brilliant costume they did when Christ was there and preached about them, the same they do here in America; the pansies of France and England turn on us the same pensive faces that are seen in our own gardens. The

"Wee, modest, crimson-tipped flower,"

of Burns, and which Woodworth called "the poet's darling," and which seemed to him whenever he met it "like a pleasant thought,"—the daisy has come over with the emigrant to live in this land. The poet I have mentioned greets the daisy by exclaiming

"Bright flower! whose home is everywhere!"

The almost human qualities of flowers are manifested therefore in the fact that they can adapt themselves so easily to different places and climates and modes of culture. The fringed gentian that seems in our fields to have borrowed its blue from the sky, colors the sides of the Alps, and the morning glory, that greets the early sun at our windows, climbs to the roofs of Swiss and German cottages. Hence, go where we will, in wood or field, in our own or in foreign lands; wander where we may, in valleys or on mountain tops, we shall meet the smiling faces of flowers. The Scotch hills may be too barren for trees, too barren for human life, but they are never too barren for the purple heather, whose bloom turns the brown rock into a garden. Climb Mount Blanc, ascend where the woods dwindle to scattered shrubs, even higher, to where lichens and mosses and rocks have undisputed dominion, higher still, to where the sterile ground is belted by perpetual snow and ice, and here as the last sign of life, as the lingering symbol of the great summer world below, clinging to its forlorn patches of soil, you shall find flowers. If ever the North Pole is reached, it will be found, I think, with a crown of flowers on it.

So, as God has given to all a love for flowers, he has made their enjoyment and cultivation possible to all.

There is hardly any condition in life we can imagine which denies to one the possession and even the cultivation of a few flowers. Does one live in a city where houses are crowded so thickly together that there is no room for a garden, nor even a foot of front yard? Let him fill his win-

dows, and balconies, and piazzas with flowers. Is one too poor to buy a rod of land? He can easily beg enough soil to fill a few pots, and with these lay out a garden in his kitchen, or dining-room, or parlor. Air and water are cheap, and these are nearly all flowers need.

Cases must be very rare in which poverty is a reasonable excuse for a flowerless home. Cultivating flowers, on the other hand, is one of the blessings of which the poor can be sure, and one of the ways in which they may successfully compete with the rich. They cannot buy diamonds and silks, and elegant furniture; let them decorate themselves and their homes, then, with flowers. They cannot spend the winter in Florida; let them invite the flowers of Florida, then, to come and spend the winter with them.

Although we all love flowers,

Our taste for them can be cultivated,

making the pleasure they afford us immensely greater. They are scattered everywhere so abundantly that their influence is diminished by familiarity. After all, how few of us appreciate them as we should, how few of us study them until we thoroughly understand their construction and realize their loveliness. "Behold," said the Saviour, "the lilies of the field, how they grow." How many heed this suggestion and stop to see "how they grow," to treasure up the wonderful lesson they teach of nature and of God. And this leads me to say, finally, that

"Flowers are Moral Educators."

They serve as a perpetual stimulant to the moral sense; they exalt our feelings and tastes. Horace Smith exclaims, "Your voiceless lips, O flowers, are living preachers—each cup a pulpit, and each leaf a book." We naturally think of Napoleon as one whose stern and hardy nature was developed, at last, by rugged experience, into something like iron, and yet what tenderness and delicate sentiment was still left in him, when we read that he once made this remark: "Where flowers degenerate man cannot live." He who stops to notice a flower, to pluck it, to admire it, be he ever so bad a man, gives at least one proof against his total depravity, one sign that his heart is yet in sympathy with the great world of beauty. The traveler in Europe and other Eastern lands, sees here and there, exhibitions of wretchedness and poverty, and uncleanness, at which he stands appalled, but the picture has always this one redeeming character—the lowest of the people cultivate flowers. The love of flowers is the one uncorrupted and unfallen angel that flies with white wings among every class of people. Homes from which almost every nameable comfort has been driven: where hunger, and nakedness, and want of all kinds, hold sway, can still afford a vine for the shattered window, and a lily, or pansy, or daisy for the ragged children to hold in their dirty hands. Peasant children often come running out of their homes with bouquets of flowers for sale, seeming confident, always, that they will find a way, through these, to the stranger's heart and pocket, while the purchaser feels he has received something better than his money; that rays of beauty have been transferred to him from places where he would have seen no

other light and felt no other pleasure. It was a garden in which the first human beings were placed, and from which their first sins expelled them, and, in finding his way back to the lost paradise, man must enter into the garden again, pure and beautiful as the flowers that grow there.

DISCUSSION.

Mr. Harris proposed to pass over the discussion for want of time, if no objections were made.

Mr. Tuttle should like to hear something about the money value of flowers. Think that might be urged as a consideration in favor of their cultivation.

Roses.

Mr. Elliot:—Why have we lost so many of our hybrid perpetual roses this spring? Have lost 14 or 15 varieties notwithstanding the usual covering.

Prof. Peckham:—The late freezes in the spring after the covering was removed are likely to have killed them. When the mercury falls below zero it makes little difference to the plant whether twenty or forty degrees.

Mr. Elliot:—They appeared unimpaired when the growing season commenced and promised to grow and bloom, but then withered and died.

Richfield Pansy.

Col. Stevens:—Would like to hear from Mr. Hoag concerning the Richfield Pansy exhibited a few years ago.

Mr. Hoag:—I do not know whether or not an inquest was held over it, but if so, the coroner is the man to ask. It died the summer after exhibition. This pansy come from seed obtained by planting four varieties closely side by side, and it combined all the colors of these four varieties. I protect with covering of straw.

Mr. Baker:—A pansy bed must be young. It runs out about every two years. To obtain large plants they must be so grown as to prevent flowering until July or August.

Mr. Harris:—Such is my love for flowers that I would rather live on three meals a week than do without flowers.

Reports.

The Secretary moved that members of the General Fruit Com-

mittee be requested to hand their reports to the Secretary, and that the same be published in the Farmers' Union, and incorporated in the Transactions of the Society. Carried.

Winter Meeting.

Mr. Elliot moved to recommend the Executive Committee to appoint the next winter meeting at Winona. Carried.

Pomological Society.

Mr. Harris spoke of the need of being represented at the meeting of the Pomological Society in September next.

Mr. Hoag moved that the President, Secretary, Mr. Harris and Mr. Elliot be requested to attend the meeting.

The Secretary moved to amend by adding that the President and Secretary be instructed to issue delegate credentials to any members of the Society who may request them with a view of attending.

Special Apple Premiums.

A motion to sustain the Executive Committee in offering special apple premiums in current premium list of the State Agricultural Society was carried.

Life Membership.

A resolution relating to life membership was here introduced and passed, but the Secretary is unable to furnish the substance.

DISCUSSION ON CURRANTS.

Pruning.

Mr. Elliot:—Has any one had any experience in pruning currants to improve the fruit or prolong the bearing age?

Mr. Grimes:—Do not prune, but manure, to bring up to bearing a full crop of good fruit.

Mr. Brimhall:—Would renew old bushes by cutting out the old wood, and by manuring. Red Dutch is about the best bearer.

Varieties.

Mr. Baker :—Will the President name the best three varieties?

Mr. Smith :—Prince Albert is one of the best, but late. Victoria is one of the best bearers. Bailey's Sweet is the best white. La Versailles is also another good red currant. Could not be hired to set Red Dutch.

Col. Stevens :—The Red Dutch is the best and surest we can raise, while all other varieties soon run out.

Mr. Smith :—Have had good success with Victoria set between apple trees. Two rows of currants between two rows of trees standing twenty feet apart.

Mr. Harris :—Does the aphid, which causes currant leaves to curl and fall, do any injury?

Mr. Smith :—It does; after the leaves fall the fruit merely colors and does not ripen. (In answer to a question.) The White Grape is larger than the White Dutch.

DISCUSSION ON RASPBERRIES.

It was then moved and carried to take up the discussion of raspberries.

Varieties.

Mr. Harris moved to recommend the Doolittle for general cultivation.

Mr. Brimhall moved to amend by substituting Seneca Black Cap and Mammoth Cluster.

Mr. Smith :—The Seneca is superior to the Doolittle—hardier. The fruit is larger, better flavored, less seedy and a little later.

Mr. Grimes :—I agree with Mr. Smith. The Seneca is the best of all the black caps. The Doolittle is a great bearer, and I would not throw it out entirely, but it sometimes kills to the snow line. Think it would be a good idea to throw some straw over them. The Seneca is an enormous bearer. Would throw out the Mammoth Cluster. It bears well if it gets through the winter.

Mr. Harris :—Have plowed mine up. They are not prolific and ripen late. The birds take them all.

Mr. Brimhall :—Have discarded the Doolittle, and now cultivate the Seneca, Davison's Thornless and Mammoth Cluster. The difficulty with Mammoth Cluster is the cones grow too large. The Thornless is sufficiently prolific to raise for market.

Mr. Harris :—I do not find it so.

Mr. Smith :—I find it prolific, and the earliest black cap.

Mr. True was asked to name the best red varieties, but declined.

Mr. Smith :—I would name the Turner, Philadelphia and Clarke.

Mr. Elliot moved to amend the first motion by recommending as first, for general cultivation, the Seneca, and adding the Doolittle and Davison's Thornless.

Mr. Grimes :—Am not growing red raspberries to any extent now ; can do better with the black caps.

Mr. Elliot :—Have a few of the Philadelphia. They have killed back badly for the last two years, but three years ago they bore a great crop.

Mr. Smith :—Mine also have killed back, and I have heard of others whose vines have done likewise. I have the Turner, which bears better and sells higher than any other red variety. It came through in good condition last winter.

Mr. Harris :—Mine also came through in good condition last year.

Mr. Smith :—Does any one know anything about the Herstine?

Mr. Harris moved to recommend the Turner red raspberry for trial. Carried.

Also moved to give the Philadelphia one more year of trial before rejection, but strong objection being made, the motion was withdrawn.

Mr. Brimhall :—I have thrown out the Kirtland.

Mr. Smith :—I have the Ontario black cap, but not in bearing.

Mr. Harris :—Has any one had any experience with the Harkness black cap? I received six plants from Mr. Sias, of Rochester, and they gave such a yield as I never saw from any others.

Mr. Baker :—Is the same soil equally suited to all varieties?

Mr. Smith :—The red varieties like more moisture than the black caps. All like moisture, but not stagnant water.

The action of the Society on raspberries was therefore as follows :

Recommended for trial :

Turner's Red.

Col. Stevens moved that members of the Society be requested to send to Mr. Lacy, Professor of Agriculture, specimens of all new varieties of grains, fruit trees, &c., for trial on University farm. Carried.

A vote of thanks was tendered the University authorities for their cordial reception, their hospitality, and the use of rooms for this meeting.

Pres. Folwell invited the Society to make use of the rooms at the University, and to feel welcome there at all times, and to appoint meetings there whenever convenient.

Judge Baker moved that Col. Stevens, Gen. Nutting, and the President of the Horticultural and Agricultural Societies, be appointed a committee to apply for a room at the State Capitol for the two societies, and to be open at all times. Carried.

The Society adjourned to take another look at the articles on exhibition, and thus closed the first summer meeting of the Society that has been held for several years. Few or none will venture to call it a failure, though the number present was not large. Many are enthusiastic over its success, and it is hoped that it is the pioneer of a series of summer meetings which shall gradually increase in size, importance and usefulness, and give the Society a reputation which shall establish it on a firm basis.

To the success and interest of the meeting the exhibition added in no small degree, and though we speak of this last, the fact must not be taken as an index of its importance. The articles were arranged on two rows of tables flanking the sides of the floor of the new chapel.

Articles on Exhibition.

Gracing the Secretary's table were three handsome bouquets received from Mr. Wm. King, of St. Paul. They contained of roses two varieties, pelargoniums two varieties, fuchsias five varieties, heliotrope, verbenas, rose geraniums, and several other varieties of choice flowers.

Perhaps the most striking and beautiful collection was that of Mr. J. C. Fleischer, of St. Paul. These plants were in pots. They made a truly fine appearance and the thanks of all are due Mr. Fleischer for his labor in placing these on exhibition. The collection comprised geraniums, 11 varieties; begonias, five varieties; fuchsias, five varieties; pelargoniums, and other flowers.

Mr. C. M. Loring had one basket bouquet and two bouquets of roses.

Mr. J. C. Booth, a beautiful Yucca and two bouquets.

President Smith, St. Paul—Roses, 20 varieties; peonies, 10 varieties; fuchsias, 5 varieties; calycanthus, feverfew, pinks, dielytra, perennial phlox, verbenas, a Mahonia, green currants, 5 varieties; asparagus, 4 bunches; Chas. Downing strawberry, 2 baskets; leaves of bloodroot under cultivation.

J. S. Harris, La Crescent—Two varieties of sweet potato, Red Bermuda and Southern Queen.

Wyman Elliot, Minneapolis—Peonies, 8 varieties, and some giant specimens of pie-plant.

Mr. Elliot gave some figures, as follows, relating to his pie-plant: One stalk weighed one pound and $14\frac{1}{2}$ ounces; 9 stalks from one hill weighed 13 pounds and $4\frac{1}{2}$ ounces; the entire hill, stalks and leaves, weighed 78 pounds.

Mr. J. T. Grimes, Minneapolis—Bouquet of mock oranges and roses; peonies, 11 varieties; roses, 12 to 15 varieties; currants, 4 varieties; gooseberries, 2 varieties; transcendent crabs.

Mr. W. E. Brimhall, St. Paul—Cauliflower, three heads; Golden Russets; Soulard crabs; Charles Downing strawberry; large specimen Early Rose potatoes; pie-plant; asparagus, for table and for hanging; rose bouquet, of six varieties.

PROCEEDINGS AT THE WINTER MEETING HELD IN WINONA,
JANUARY 18TH TO 20TH, 1876.

Pursuant to notice given through the public press and by the distribution of programmes, the Society convened in the rooms of the city council of Winona, January 18th, 1876.

WINONA, January 18th, 1876.

The meeting was called to order by President Smith at 11:25 A. M.

Welcoming remarks by Rev. Edward Ely:

I am glad to see the fruits growers of the State in Winona. Winona is one of the first counties in successful fruit growing in the State, especially in apples. I am glad that you have come from other parts to give encouragement toward raising apples. We have not been very successful for two or three years past. The last two or three winters have ruined bearing trees. I recently made a visit to the poor farm, where last year hardly a barrel of fruit grew on 800 or 400 trees. I hope with the advice and experience of this Society we shall have better success. We have succeeded well with small fruits, strawberries, blackberries, raspberries and grapes. We bid you welcome here. I hope you will be

hospitably entertained, and will feel at home in the city. I close with the hope that the attendance on your meeting may be all that can be desired.

Reply of President Smith.

We are as happy to meet here as you are to see us. Hope to see your fruits on the table here at our meeting. Hope to meet the apple growers of this section, and, as they are the oldest in this branch of horticulture, they ought to teach us. I congratulate you on the progress this place has made since the first time I saw it, broad fields of waving grass. If thus much has been accomplished in the last twenty-five years, what may we not expect in the next twenty-five years! And may not horticulture advance with the other improvements? The interest we see you taking in your streets and cemeteries, shows the interest you take in horticulture. Winona wants not so much the frequent meeting of this Society, as a local society to work for itself and with the State Society. Minnesota, though not the largest State in the Union, is hardly surpassed in variety of soils and climates, and what we want is local societies, which shall search out the varieties and methods suited to each locality. Let us put our hands to the wheel, and work together with a will.

Committee on Appointment of Committees.

A motion to adjourn was made and seconded. On motion of Mr. Elliot a committee was appointed to report on the appointment of committees and the men to serve on them. The President appointed W. Elliot, N. Buck and P. A. Jewell, but Mr. Buck asking to be excused, Mr. Ely was substituted.

Motion to adjourn until 2 o'clock was then carried.

TUESDAY AFTERNOON.

Meeting called to order at 3:05 P. M.

Appointment of Committees.

The committee on appointment of committees made its report. On motion of Mr. Grimes it was accepted and adopted. The Pres-

ident proceeded to appoint the committees in accordance with this report, as follows :

Committee for the solicitation and collection of fruits for the Centennial Exhibition to report to and be in correspondence with its chairman :

Chas. Y. Lacy, Chairman, Minneapolis, Hennepin county.

J. S. Harris, LaCrescent, Houston county.

S. Bates, Stockton, Winona county.

John Hart, Winona, Winona county.

Geo. W. Clark, Winona, Winona county.

Dr. J. Q. A. Vail, Homer, Winona county.

P. A. Jewell, Lake City, Wabasha county.

Barrett Taylor, Forestville, Fillmore county.

E. B. Jordan, Rochester, Olmsted county.

B. F. Perry, Rochester, Olmsted county.

R. B. Hathaway, Pleasant Grove, Olmsted county.

E. H. S. Dartt, Owatonna, Steele county.

Dr. Twitchell, Chatfield, Olmsted county.

T. G. Carter, St. Peter, Nicollet county.

Robert Goodyear, Mankato, Blue Earth county.

J. B. Swan, Garden City, Blue Earth county.

W. W. Pendergast, Hutchinson, McLeod county

O. F. Brand, Faribault, Rice county.

R. C. Judson, Farmington, Dakota county.

Ditus Day, Farmington, Dakota county.

F. G. Gould, Excelsior, Hennepin county.

P. M. Gideon, Excelsior, Hennepin county.

J. W. Boxell, Afton, Washington county.

J. I. Salter, St. Cloud, Stearns county.

M. C. Bunnell, Money Creek, Houston county.

At a meeting of the Executive Committee, held March 5th, it was resolved not to exhibit at the Centennial, but to exhibit with the Pa. State Hort. Soc. at the same place some time in September, when there will be an *ad interim* meeting of the Am. Pomological Society. The above committee was respectfully requested to perform the same services under this slight change of programme.

Committee to report on summer meeting :

J. T. Grimes, J. S. Harris, D. A. J. Baker.

Committee on cataloguing fruits, shade and ornamental trees :

P. A. Jewell, Wyman Elliot, A. W. Sias.

Committee to report on the condition and progress of horticulture in the agricultural department of the University of Minnesota: Col. J. H. Stevens, E. H. S. Dartt, Wm. Cannon.

Committee on Finance, whose duty it shall be to solicit aid for the promotion of the best interests of the Society: C. M. Loring, Norman Buck, A. W. Sias.

Roots for Market.

Several members being absent so that the regular order of the programme could not be followed, the paper of Mr. P. C. Sherren, St. Paul, on the "The Cultivation of Roots for Market," was read by the Secretary. At the close of the reading it was ordered incorporated in the Transactions. The following is the text:

CULTIVATION OF ROOTS FOR MARKET.

From my not being at St. Paul for a week I did not receive yours of the 30th ult. until a few days since. I beg to state that I raise no early vegetables that require a hot bed to grow the plants, and only a small quantity of other kinds, as I do not regularly attend any market during the summer, but I will give you a brief account of what I do grow.

Onions.

I have been a grower of onions in Minnesota every year for fifteen years, and for many years in much larger quantities than what I do now. I consider my average crop has been from four to five hundred bushels to the acre, but in the year 1861, I had about eight hundred bushels to the acre; it was considered by all who saw them to be the largest crop of onions ever raised here. My usual method of cultivation is as follows:

Soil and Care.

I generally grow onions on the same piece of land from year to year, and if possible prepare the land in the autumn by manuring it heavily with well rotted barn-yard manure, plow it in, and early in the spring plow again and work the land until it is as fine as it can be made, then drill in about four pounds of seed to the acre, with a garden seed drill, in rows fourteen inches apart, and as soon as the onions can be seen in rows, commence hoeing and weeding, and all the wood-ashes that have been saved during the winter are strewn on the rows.

Varieties.

The kind of onions that I have raised are the Large Red Wethersfield and Yellow Danvers, which I consider the best keepers.

Cabbage.

I also raise my cabbage plants for autumn and winter cabbage in my onion bed by mixing a small quantity of seed with the onion seed which are drilled in together, and have never had the cabbage plants destroyed by the small fly, which is often the case when grown in a separate bed. I attribute my success in raising cabbage plants to having them with the onions.

Parsnips and Carrots.

I make rule to grow parsnips and carrots on land that has been heavily manured the previous year, by so doing I get no forked roots and am sure to get a large crop. I sow both in drills fifteen inches apart.

Beets.

I select a piece of land that has been well manured the previous year for my early beets also, and the sort I raise for the early is the Bassano, and the second early, Dewing's Extra Early Blood Red Turnip. Those two kinds I prefer to all others, and for winter beets the Long Smooth Blood. I sow the two early kinds as soon in the spring as the season will permit, and the late not before the end of May or beginning of June—by sowing late they are of better quality. I sow in drills fifteen inches apart, and thin to about six inches.

Roots for Stock.

The roots that I grow for winter feed for my cows are Long Red Mangel Wurzel, White Sugar Beet and Yellow Globe Mangel Wurzel, and can raise from eight hundred to nine hundred bushels to the acre; the land must be heavily manured to raise a large crop. I sow in drills two feet apart, and thin the Long Mangels and Sugar Beets to about a foot apart, but the Yellow Globe can be grown closer together than the others. I consider these roots excellent for milch cows and of great value to feed during the winter.

My land is a sandy loam with a little clay mixed with it. I consider it must be an excellent soil for roots and vegetables. By manuring I have never failed to raise good crops.

Should you think the above on the cultivation of roots, &c., be worth producing at the meeting of the State Horticultural Society you are at liberty to do so.

My health has been bad the whole winter. I seldom leave home and cannot venture to take the journey to Winona, but should have been pleased if able to attend the meeting.

I am sir, yours respectfully.

P. C. SHERRIN.

Floriculture.

The Report of the Committee on Floriculture, by Mrs. Van

Cleve, Minneapolis, was then read by the secretary, and on motion of Mr. Jordan ordered incorporated in the Transactions. The following is the paper in full:

REPORT OF THE COMMITTEE ON FLORICULTURE.

One who does not know Minnesota by experience, cannot realize the exhilarating effect of a winter ride in its clear, keen atmosphere, so full of the life-giving principle that every inhalation is like a draught of the "wine that maketh glad the heart of man."

What if the mercury is nearing the bulb? there is no dampness to make one shiver; one's blood is so thoroughly purified and circulates so healthily, that he can laugh at the cold; he is alive all over, and, instead of being chilled and uncomfortable, he feels like shouting for joy and thankfulness that his lot is cast in this glorious clime.

On the afternoon of January 18th of this our new-born year, after such a ride, which filled my soul to overflowing with a sense of God's goodness, I found myself, as if by magic, in the midst of lovely flowers and tropical foliage, where the air was soft and warm, the sun shone brightly, and summer reigned in wonderful beauty.

Bright crimson and creamy white camellias opened their lovely cups among dark, glossy foliage; exquisite carnations bent low their fringed petals, heavy with aromatic fragrance; the slender passion vine looked in and out on pretty primroses of various hues, very charming in their graceful simplicity.

Geraniums, heliotropes, myrtles, and many other beautiful things, flourished in luxuriance all about us; great begonias, with rich variegated leaves and bright blossoms, interspersed with endless varieties of mosses, graceful ferns and delicate water ivies, formed an elegant setting to this bower of beauty, while the slender, shining smilax made wreaths and festoons over all, and vigorous English ivies, with their dark-green leaves, so suggestive in their firmness and durability of the practical common sense of the land of their birth, wound their strong arms around the pillars of this floral temple, giving the air of solidity and security to what seemed so like fairy land, that I almost feared to breathe or speak aloud, lest, like a lovely dream, it might vanish out of my sight. Only a short time, however, could be spared from imperative duties to enjoy this beautiful vision, and as we took a lingering look, and passed out into the keen air and the snow, I thought what a blessing, and how much real enjoyment the study of floriculture has bestowed upon humanity. During our short summers we enjoy the prairie and forest beauties, and never tire of studying and cultivating the wonderful and lovely things which God scatters so bountifully about us; and the christian delights to look up from all these beautiful creations to Him who made them, and say, with a sense of ownership, "My Father made them all." Shall we not then praise and magnify His holy name, that he has put it into the hearts and minds of men to study the habits of the floral world, so that our enjoyment of them may not cease, when this same dear Father, for wise and kindly purposes, "commandeth and raiseth the stormy wind, when He giveth snow like wool,

scattereth the hoar frost like ashes, casteth forth His ice like morsels, and who can stand before His cold?"

It seems a thing impossible that a horticulturist should be a sceptic, or a wicked man. There are such wonders constantly revealing themselves to him, that not only must his mind acknowledge a God in all these things, but his heart must be softened and warmed to Him, who taketh such thought and tender care for even inanimate objects.

As proof that the study and culture of flowers affects the heart, as well as the mind, let me give you an extract from a letter from the South:

"The *Euonymus*, which is valuable either singly or as a hedge plant, has also the silver-leaved variety. Its leaf buds are very conspicuous in winter, and have a size and vigor that somehow gives one a sense of courage. It is the plant of all others I would choose, to illustrate two points in botany that often escape the eye of a superficial observer, but which are full of interest, even to young children, when pointed out, viz., the formation and careful packing away of young leaves in the leaf bud, and the existence of the embryo in the seed. The fruit of the *Euonymus*, in mid-winter, before drying, is a lovely study. The pericarp opens and discloses from one to four egg-shaped orange-colored seeds. Beneath this pretty seed-coat, and the inner, thinner one, lies, embedded in pure white starch, an embryo of bright green color, its two leaves elliptical in shape, so easily separated and so exactly like the large leaves growing on the shrub, that one feels a sort of awe in looking upon the wonder, followed by an impulse to caress softly the sleeping baby plant."

There are heart lessons, as well as great enjoyment to be drawn from this beautiful science, and from the healthy moral influence it exerts, it becomes the duty of Christians and philanthropists to encourage it. All cannot have a greenhouse filled with tropical beauties, but all can cultivate one or more window-plants, and the gentle humanizing influence of these lovely silent teachers, much more than compensates for the care bestowed upon them. One never feels alone where there are flowers. They seem like sentient beings, and to the old, the feeble, and infirm, they are especially dear. We all know their blessed effect in a sick room, and some of us have seen a feeble, suffering invalid shed tears of joy over a single geranium leaf, hugging it to his heart as if it was a living friend.

If I could convey to the wards of a hospital my graceful fuchsias, my scarlet geraniums, my pretty twining smilax, and my precious calla, now blooming in all her queenly purity in my window, I am sure they would do more good to the weak and sorrowing ones than the doctor's visit. And this leads me to speak of the great good accomplished by the flower missions, now so much in vogue, and to suggest that we in Minnesota, who love flowers so well, should make a move towards supplying our hospitals and asylums, our alms-houses, aye, our jails and State prison, with these beautiful gifts of God.

Any one who has read the very interesting and instructive story of *Piccola* must be convinced of the benign influence of flowers on those unfortunates who are shut out from their fellow men.

God gives these blessings to us so liberally, not from our deservings, but out of His own great love: shall we not share them with those who

have them not? Love and unselfishness are among the lessons they are designed to teach; let us learn these lessons. As a Society let us manifest that we recognize science as the handmaid of religion, and in humble imitation of the God of nature and grace "who maketh His sun to rise on the evil and on the good, and sendeth His rain on the just and on the unjust," let us inaugurate a plan whereby the wilderness of sin and suffering, and the solitary place of the criminal shall be made glad, and the desert of poverty and wretchedness shall blossom as the rose.

C. O. VAN CLEVE.

To the Horticultural Society of Minnesota:

If these thoughts of mine, written in great haste and in the midst of onerous cares and duties, are deemed worthy of acceptance as a report of our committee, the Society is very welcome to them. I regret that lack of time put it out of my power to send anything better. I love the culture and study of flowers so dearly that when I attempt to write of them, I hardly know where to begin, and a hurried essay or report is always unsatisfactory to me.

Very respectfully,

C. O. VAN CLEVE.

DISCUSSION.

Mr. Harris confessed to being half crazy on flowers. They ought to be grown more, especially by farmers. When horticulture has its proper place, every farmer's house will be adorned with flowers and furnished with fruits. Hoped that other ladies would follow the example of Mrs. Van Cleve, and give us papers on the subject of flowers.

Varieties for Cultivation.

Mr. Jewell hoped Mr. Harris would name some flowers and shrubs for cultivation. How flowers inspire humane sentiment we all know, but we want the names of flowers and shrubs for this State.

Mr. Harris:—That ought to be left to a committee. There are, however, a few that all can get. Would name for annuals Mexican ageratum, china asters, mignonette, petunias, larkspurs, balsams, antirrhinums or snapdragons. For biennials, pinks, hardy herbaceous phlox, which is perfectly hardy unless on sandy soil. There are a hundred varieties; they begin to bloom early in July or last of June, and continue till after frost. When necessary to protect plants, would use straw horse manure.

Roses.

Hardy roses are the Cinnamon, Blush roses, Harrison rose, Persian Yellow rose, and Queen of the Prairie for a climbing rose; this needs protection with litter from the horse stable. The same protection answers for Hybrid Perpetual, and even tea roses.

Bulbs.

Peonies are easily grown and any one can grow them. For tulips only the slightest protection is needed. They should be taken up once in three or four years and the surplus bulbs given to poorer neighbors.

Shrubs.

Of shrubs easily propagated and perfectly hardy there are the Snowball and Lilacs, and if one has no money with which to buy, he can get the common Wahoo or Burning-bush, which is very fine, but blooms at a different season. The berries, of a crimson color, give the plant the appearance of a burning flame. The High-bush Cranberry is still another fine wild shrub, easily obtained.

Bedding Plants.

Mr. Elliot:—The wahoo grows commonly on bottom lands. The verbena, geranium and pyrethrum, or fever-few, are fine bedding plants, left out by Mr. Harris. The verbena is not excelled, and gives continuous bloom from early till late. The geranium is likewise very fine. The fever-few is much used in cemeteries, and gives agreeable variety. The gladiolus should be classed with the tulip, as one of the finest bedding plants. Of lilies there are the Japan, tiger, blackberry, and white day lily. The wahoo we should all go into the cultivation of, more than we do. The berries are of the shape of bittersweet berries, and the foliage turns crimson after frost.

Preservation of Plants.

Mr. Harris:—I practice a method of keeping geraniums by which any one can handle them. I dig them up before frost, cut back the tops pretty close, set in a box of such size as can be handled easily, and put them in the cellar. No matter how dark it may be;

if the cellar is dry they will need watering once, but if moist not at all.

Mr. Cannon:—Prefer leaves for protection for all kinds of plants, especially where they can be obtained plentifully.

More Varieties.

Mr. Jewell:—There are several varieties of peony of great beauty. Tartarian honeysuckle and the syringa are perfectly hardy. Weigela rosea is also hardy.

Mr. Elliot:—Hydrangea paniculata grandiflora, a shrub bearing white flowers, is fine. Mr. Smith had one that bore 250 blossoms last year, perfectly hardy, easy of propagation, reliable, and can be grown by everyone without protection.

Mr. Harris:—The American cowslip is another plant worthy of cultivation. The common aquilegia is another hardy perennial. The hyacinth needs only a little protection. Those are costly. I meant to name only cheaper and at the same time beautiful kinds.

Mr. Smith:—I have a yellow jasmine that stands well.

Hybrid Perpetual Roses.

Mr. Grimes:—Would name hybrid perpetual roses. Had grown many varieties with good success. Grew the first grown in Hennepin county. Protects with straw. Had at one time 42 varieties. The white ones are tender but the colored varieties stand better. His method is to cut back severely, cover roughly with straw, throwing the same over the plant. They need high cultivation and manure. They bloom on new wood, and if kept growing all summer they will bloom all summer. They are of all shades of color, and there is nothing equal to them for beauty. The older varieties are hardier than the new ones. Gen. Washington and La Reine, Baron Prevost and Gen. Jacqueminot are all hardy. Mrs. Elliot is pretty hardy. La Reine is one of the best of bloomers.

Mr. Smith:—Had one five feet high, blossoms bright rose color.

Mr. Harris:—Knew of one that grew in Brownsville nine or ten feet high, trained on a trellis, and in June it bore a wagon-load of flowers. They are difficult to propagate. This man propagated by layers.

Mr. Grimes:—All are propagated by layers or by cuttings. La France is another fine variety.

Mr. Cannon:—Madame Charles Wood is another good variety.

Mr. Smith:—Madame Smith is a good rose.

Mr. Jewell:—Have grown a good many roses. I protect only with straw, but use it freely and apply it with care. If the plant is set where the snow stays, and straw is used also, nothing can be better.

Horticulture in Anoka County.

This discussion concluded, the report of Lewis Martin on the condition and prospects of Horticulture in Anoka county was read by the Secretary, accepted by the Society and ordered incorporated in the Transactions.

It is as follows:

CONDITION AND PROSPECTS OF HORTICULTURE IN ANOKA COUNTY.

ANOKA, MINN., Jan. 12th, 1876.

Chas. Y. Lacy, Esq., Sec. State Horticultural Society:

DEAR SIR:—Yours of the 10th inst. requesting report of horticulture and horticultural prospects in this locality, received. In reply will say. I have been interested in horticulture for about forty years; have lived in four different States.

Climate.

For the last twenty years I have resided at this place, and I think all who have had experience with our trying climate will agree with me that the place is yet to be found that presents so little encouragement to the enthusiastic horticulturist as the northern portion of Minnesota.

Hard Winter.

For the last few years preceding the memorable winter of 1872-3 our winters had been comparatively mild. We had commenced planting many of the semi-hardy varieties, such as Haas, Ben Davis, Fameuse, Perry Russet, &c. I was propagating and had on hand a large stock of young trees, from our new seedling apple trees. The most of these seedlings, had been raised by Mr. R. Woodward, William Evans and S. Hawkins, of Hennepin county. All of these trees had borne fruit for several years, and to all appearance, were as hardy as an oak. Mr. Woodward had an orchard of 25 or 30 trees in bearing, all seedlings of his own raising, of which he was justly very proud. These seedlings, together with all of the semi-hardy varieties, were found to be dead in the spring of 1873, and I am sorry to say my

Wealthy

apple trees, together with Gen. Grant and several others of the new hybrids, shared the same fate. I am glad to know, however, that the origi-

nal Wealthy stood the test, and that others are having better success in propagating it than I have had.

Duchess.

In this section the Duchess of Oldenburg now ranks as our most hardy apple, but is far from being an iron-clad—they die or give out after bearing two or three crops of fruit.

Prospects.

Some may differ with me, but I venture the assertion that this portion of the State can never be made profitable for apple growing unless there is a radical change in the climate. I do not allude to the extreme cold, but to our clear dry atmosphere and the scorching effect of the sun's rays.

Cause of Injury.

That the injury to our apples and some of the crabs was due to the sun, is proven by the appearance of the trees in the early part of the season. The bark is always injured or killed on the south side. Another fact—I found in the spring of 1878, that the Duchess of Oldenburg, where they were protected from the sun by buildings were only slightly injured, while those protected on the north by timber and exposed to the sun were either killed or badly injured. That much of the damage is due to the dryness of our atmosphere is proven by the fact that varieties which pass the winters uninjured near large bodies of water, the temperature being about the same, will kill in the interior. This would seem to prove that the humidity of the atmosphere tends in a measure to counteract the clearness of the atmosphere, thus preventing injury from the sun. Drouths undoubtedly injure the vitality of vegetable life to a certain extent and render it more susceptible to injury. Nevertheless, the direct cause of the damage was heat, and not cold. We may search Norway, Sweden, Iceland and Russia for hardy varieties of the apple, but it will not avail unless we can find varieties iron-clad against the effects of a clear, dry atmosphere and the scorching rays of the sun.

Siberians.

The Siberian family of crabs are at home in all localities and under all circumstances, whether or not protected from the blasting wintry winds, or our scorching summer suns.

Transcendent.

The Transcendent is the standard variety here. Our farmers are planting them by the hundred, five hundred and thousand, for the purpose of making cider and cider vinegar. One of our farmers raised about three hundred bushels the past season, which he manufactured into cider. I once saw a prominent member of our horticultural society from the southern portion of the State, rise in his place and declare the Transcendents were not worth raising; said he had so many that after using all he could in his

family, selling all he could and giving away all he could, that he commenced giving them to his hogs, and that he gave them so many that they would not eat them. That is the very reason why they are so valuable—they are such abundant bearers, so thrifty and so hardy. The man who would try to sell our farmers anything else in the shape of apple trees would meet with a poor reception. Some of the new hybrids may prove valuable, but the Transcendent is the tree for "the million."

Planting.

A very common error in planting has been to plant in low places or sags, protected on the north by rising ground or timber. I have seen Duchess of Oldenburg and Hyslop that were killed dead, and Transcendents injured in such places, while those planted on high ground unprotected on the north would escape uninjured.

Pears, Plums and Cherries.

Pears and tame plums annihilated or killed to snow-level. Cherry trees about the same as the Duchess of Oldenburg. They live a few years, bear small crops of fruit and die out.

Small Fruits and Grapes.

Small fruits and grapes do well here, and I hope the day is not far distant when our people will give increased attention to their culture.

Recommending Varieties.

In conclusion, I would suggest that the Society in recommending a list of fruits (particularly apples) should divide the State east and west, at or near Minneapolis. Such varieties as the St. Lawrence, Red Astrachan, Price's Sweet, Fameuse, and the Saxton or Fall Stripe may answer for amateurs in the southern part of the State, but I would as soon think of planting peaches for profit.

Very respectfully yours,

LEWIS MARTIN.

DISCUSSION.

The discussion which followed this paper was ordered appended to the paper on Methods of Propagation to Secure Hardy Trees, and will be found on page 68, and following.

TUESDAY EVENING.

Meeting called to order at 7:25.

Pomological.

Mr. Hodges being absent, and his paper not at hand, Mr. Elliot read the report of the delegates to the meeting of the American Pomological Society.

On motion of Mr. Jewell the report was ordered incorporated in the Transactions. It is as follows:

REPORT OF DELEGATES TO THE MEETING OF THE AMERICAN POMOLOGICAL SOCIETY.

The biennial session of the American Pomological Society, held at Chicago in September last, was a grand success. The many attending appreciating the fine exhibition of fruits, from British America to the Mexican Gulf—from the Pacific Slope to the extreme limit of fruit culture in New Brunswick. Here were mingled the fruits of tropical and temperate zones. It is said to have been the finest exhibition ever held on this continent.

Apples.

The king, the apple, was here large, rosy red, blushing like a maiden's cheek, lustrous and spicy, full of the nectar that our boys and girls enjoy of a long winter evening. Varieties too numerous to mention. Many new seedlings of great promise were shown that mayhap will swell the already large list.

Pears.

Pears were presented in great variety, some exhibitors' lists numbering among the hundreds. Marshall P. Wilder had a fine collection of 270 varieties, which deserve the highest honors. Seedlings were numerous, and one collection from B. S. Fox, San Jose, California, was considered extremely fine. Specimens from historical trees, collected by Robert Manning, Salem, Mass., including the Endicot, planted about the year 1680, an orange pear tree 285 years old, a Werder grafted April 19, 1775, and a tree planted by Anthony Thatcher in 1840, were exhibited.

Plums.

Plums from western New York were exceedingly fine, reminding us of our boyhood days, when in Maine we had Gage, Damson and Purple plums of rare excellence.

Grapes.

Grapes were immature for the most part, and showed the want of sunshine. Seedlings were quite abundant, those of J. H. Ricketts, of Newburg, N. Y., deserving the most attention.

Peaches and Blackberries.

Peaches in great variety, blackberries enormous in size, presenting a temptation to handle and taste hardly to be resisted, and a collection of semi-tropical fruits, including oranges, lemons, pomegranates, bananas, figs, pineapples, &c.

Discussions.

It was a rare treat to hear those solons of pomology discuss the merits of the different fruits. The cataloguing of fruits was one of the best features of the convention. It gave every one the benefit of the Society's experience in a nutshell. Each variety had its poor as well as its good qualities ventilated. There were but few varieties recommended for trial, adapted to this climate. One new variety, the Wealthy, was considered worthy of general cultivation.

Awards.

The committee on award of the Wilder medal, reported the collection of fruits was much better than had been expected, and recommended the awards as follows: 1st, Michigan State Horticultural Society, for the splendid display made by the different horticultural associations of the State. 2d, Iowa State Horticultural Society, for collection of apples beautifully displayed by Mr. James Smith, of Des Moines. 3d, Wisconsin State Horticultural Society, for general collection of fruit. 4th, Nebraska State Horticultural Society, for collection of apples. To the following individual collections: John Saul, Washington, D. C., for pears; Elwanger & Barry, Rochester, N. Y., for pears and for plums; E. Moody & Son, Lockport, New York, for general collection; J. H. Ricketts, Newburg, N. Y., for a large collection of seedling grapes of great promise; Isidor Bush & Son and Masner, of Basherry, Mo., for a collection of native grapes; D. Redmond, Ocean Springs, Miss., for an interesting collection of semi-tropical fruits; Edward Daniels, Ganston Hall, Va., for pears and grapes; A. Fahnestock, Toledo, Ohio, for pears; Fand. L. Clapp, Dorchester, Mass., for seedling pears and a fine dish of "Clapp's Favorite;" J. W. Manning, Reading, Mass., for pears; Hovey & Co., Cambridge, Mass., for pears; S. E. Chamberlain, Waterford, Va., for apples; B. S. Fox, San Jose, California, for seedling pears.

Resolutions.

Resolutions were passed designating Baltimore as the place for the biennial meeting of the Society in 1877. Also a resolution, by W. C. Flagg, denouncing the present postal law relating to third class matter, declaring it a nuisance and urging its repeal.

South Park.

The drive to South Park, tendered to the delegates by the park commissioners, who escorted them in carriages along their fine avenues and streets (to Grand Boulevard, down to Oakwood Boulevard, on to Drexel Boulevard, down Drexel to Bayard avenue) revealed what had been accomplished in the short space of two years, under the guidance of one of the best landscape architects of the age, Prof. Cleveland. The planting of immense elm trees on the outside, the laying out of flower borders and beds, the planting of ornamental trees and shrubs, and not least, the lawns, more like velvet than mere grass-plots, to one who has an eye for the beautiful, was a treat long to be remembered. The Botanical Garden, though still in its infancy, had growing some 8,000 plants. This park is the largest in the country, and doubtless will in a few years become a place of much renown. No one visiting Chicago should leave before admiring the beauty there portrayed by that great architect.

Minnesota's Display.

An old adage says, "the truth should not be spoken at all times," but the present requires plain speech; though it may not be agreeable, or look well in print, yet facts are stern realities, and should be presented at times when inactivity and indifference take possession of a Society. Your committee cannot look back on our display of fruits at Chicago with any but feelings of regret, having signally failed to make such an exhibition as we might have done had our fruit growers responded to our solicitations with the enterprise we expected.

Your committee blushed with shame when interrogated by Minnesotians as to the exhibitions from our own State. We could point to only a few specimens of apples, crab-apples, native plums, grapes, and a few specimens of bottled small fruits (collected by Prof. C. Y. Lacy, for the use of the State University.) I fear the "almighty dollar" stood in the way of that encouragement from our friends that we desired. A few of the answers received to our cards of solicitation may give you some idea of how much this splendid opportunity for exhibiting the fruit resources of our State was appreciated, viz.: "I think I shall not send any fruit to the Exposition as I have no apples but Tetofsky, Duchess, and Haas, and can use them to a *better purpose*. There are but few apples to be had, and I cannot spend time to gather an assortment of any account." Another says: "I cannot get any fruit worth sending you. I have but few specimens of Wealthy, and those I cannot spare. The trouble is no one will *make a present* of any fruit." Yet another: "I have no fruit to send to Chicago." A fourth gentleman says: "I have but few grapes that are ripe; not enough to do any good." Here is the whole secret of our failure, and I, for one, am not willing the blame should be ascribed to the committee. The exhibition, to be sure, was early for many of our fruits, some of the apples being immature, our late plums not ripe, and our grapes needing at least two weeks' more time to ripen. The few bunches of grapes on exhibition compared favorably with those from farther south. To show you how we missed a golden opportunity for advertising one of our best seedlings, I will give you an example:

There was exhibited a Wealthy apple about the size of a Transcendent crab, the only one on the tables. This stunted specimen was shown as a fair sample of the Wealthy, and no explanation on our part could dispel the idea from people's minds that it *was* the best we could produce. A certain reporter who visited the Exposition, returning home and seeing the fruit exhibited at our State fair, said in no very complimentary language "that we made a failure; it would have been better to have staid at home." The year was acknowledged unproductive, but some from favored localities could have added materially to the collection if they had desired. Winona had some very fine fruit on exhibition at the State fair, but I think not a single specimen at Chicago. Lake City exhibited, for two days only, a few plates of crabs and hybrids. W. E. Brimhall, Truman M. Smith and J. T. Grimes, sent a few specimens of Duchess, Transcendents, Hyslops, &c. John S. Harris, as usual, exhibited a number of varieties of standard apples, the best he had. If others had done likewise, we should have had, if not a gorgeous, a *creditable* display. I desire to impress upon the members of this meeting the necessity of early and active measures for an exhibition at the Centennial.

Exhibitions in 1876.

The American Pomological Society, at its last meeting, resolved to accept the invitation of the Pennsylvania Horticultural Association to meet for a social reunion in September, 1876, at the Quaker City. We should mature plans as soon as possible, and it would seem advisable now, while together, to discuss this all-absorbing question. This year is fraught with many benefits to our great Northwest, if we but improve the opportunity of exhibiting to the world in a presentable form the varied products of our soils, not the least among which is the fruit interest. We cannot be surpassed in the quality of such as we do raise, nor in that beautiful waxen appearance which all our fruits possess. In sprightly flavor our cultivated apples, crab-apples, plums, grapes, currants, gooseberries, raspberries, strawberries, and uncultivated cranberries, blueberries, huckleberries, raspberries, blackberries, &c., excel that from more southern localities. Floriculture should be represented in all its varied forms. Finally, there is *much* in the State that would be of interest to the gazing throng if we but do our whole duty in placing our resources upon the tables in the most interesting manner. Pardon me for these few suggestions. Let whoever has charge of the collection of fruits not rely upon written solicitations, but have the pledged assistance of an efficient working committee, whose hearts and souls are in the work; who are willing to contribute *time*, and money, if need be, in making collections. There are some, not many, I am glad to say, who do not take that interest they ought in an enterprise of this kind. Let us as a society make one grand effort, and send, not only what we ourselves, but our friends and neighbors raise. If a few in each county take the matter in hand, make their collections and forward to the State committee, there will be a variety from which to select *some* worthy of the object.

Never grow weary in well doing. Try to help each other over the rough road of adversity, for we all feel better for a little timely assistance given,

not grudgingly, but with a hearty good will. Our State should be more liberal to our Agricultural and Horticultural Societies. We are looked upon by many as a mutual admiration society, devoted to the interests of nurserymen and a few stock and grain growers, who have entertained the idea of turning an honest penny by having something better than their neighbors. In the name of reason and common sense, *who* is to derive the benefit from our enterprise and forethought if it be not the State at large. "There seems to be a feeling of distrust among our *members*, a fear that some one is deriving an unforeseen benefit that will not redound to the advantage of the whole. This is all wrong. We should do away with the feeling of exclusiveness and conceit which exists to some extent among fruit-growers, and substitute instead a universal desire to promote each other's welfare. That while there shall ever be a healthy and generous emulation, there shall also be more frequent and friendly consultations, a closer union, and better friendship." "There is, that scattereth and yet increaseth, and there is, that withholdeth more than is meet, but it tendeth to poverty." "In union there is strength." "Our State needs your united action. You yourselves need the stimulus of these meetings, discussions, and exhibitions. Where the wrong shall be corrected, the right strengthened, and where the experience of each shall become the property of all."

WYMAN ELLIOT.

DISCUSSION.

Mr. Jewell explained his action as stated in the report. Said when he found so many crabs beside so few apples, he thought the sooner he got out of the way the better, as people would think we could raise nothing but crabs.

Mr. Wilcox characterized the show from Minnesota as miserable, and said he was ashamed of it although Minnesota was not his own but a neighboring State.

Mr. Harris explained how the elements prevented effective action on his part by flooding railways and sweeping away bridges. He then read an invitation from the Pennsylvania Horticultural Society to take part in their exhibition and reception on the 12th, 13th and 14th of September, 1876.

Horticulture in Southeastern Minnesota.

There being no further remarks Mr. Harris read his report on the condition and prospects of horticulture in Southeastern Minnesota, and the report was ordered to be published in the Transactions. The following is the text:

CONDITION AND PROSPECTS OF HORTICULTURE IN SOUTHEASTERN MINNESOTA.

Mr. President and Gentlemen of the State Horticultural Society :

Authority.

Article 6 of the by-laws adopted for the government of this Society at the annual meeting of 1874, requires each member of the general fruit committee to render an annual report upon the fruit crop of his respective district, and present a limited list of fruits best adapted to general cultivation in the district which he represents, and in accordance therewith I present the following for district No. 1.

Adaptation.

There is not a county within our State better adapted to the raising of most varieties of fruit than Houston. The soil is the very best, clay and sandy loam preponderating nearly everywhere. There are no extensive tracts of prairie, and the uneven surface of the land furnishes ample drainage and every desirable aspect for protection.

Before Settlement.

Before its settlement by the white man, many varieties of wild fruits were abundant, and some of them of superior quality. The strawberry, black raspberry, native plums and wild grapes were growing so plentifully that the first settlers had a bountiful supply of them just for the picking. But as improvements have progressed, and stock is allowed to roam at large, these fruits (with the exception of plums) are fast disappearing, and now hundreds of families do not average to have a single quart of strawberries or raspberries per year, and with all the favorable circumstances before mentioned but very little tame or improved fruit has been produced. In my opinion this may be traced to a lack of horticultural knowledge.

First Planting.

The first settlers generally commenced planting fruit trees as soon as they could get a piece of ground broken up, and they usually selected those varieties that were favorites in their former homes, and practiced the methods of cultivation and pruning that were in use in the older States. They had no idea that one variety was hardier than another, and therefore planted largely of the early harvest, Rhode Island greening, golden pippin, jeniton, rambo, &c., from the Rochester, New York, Nursery. These trees planted in the virgin soil made a rank, watery and late growth, and seldom survived the second winter. They re-planted with western grown trees and fared no better, and very soon it became the universal opinion that apples could not be raised in Minnesota. This opinion greatly retarded tree planting up to the time of the organization of the State Horticultural Society, when it again began to excite attention, and within three or four years of that time almost every farm had its little orchard of iron

clads, and for a few years they were doing so well that people began to entertain hopes that we should soon have apples, and also pears, in abundance. But these hopes were of short duration.

Winter of 1872-3.

The fearful storms and cold weather of January, 1873, which swept over the whole Northwest like a tidal wave, totally destroyed all of the pear trees and more than one-half of the apple trees that had arrived at a bearing size, and greatly injured many more. The consequence was a general discouragement which resulted in the neglect of what was left, and for a time the discontinuance of replanting. The partial recovery of some varieties, the fine crop produced upon the recovering trees in 1874, and the discovery that the injury sustained was generally from root killing, has combined to awaken a new interest; but the plantations now being made are largely of Siberians.

Winter of 1874-5.

The winter of 1874-75 was long continued and of great severity, but as far as my observation goes no injury was sustained by the apple trees except such as were previously much enfeebled by disease. Last spring the trees blossomed reasonably well, but the prevailing weather at that time, and for two or three weeks following, was cold and resulted in cutting off the apple crop and materially shortened that of the Siberians. However, I am confident that this was a blessing for us, for another full crop without a season for rest and recruiting would have been destructive to many of the remaining trees.

Pears.

For a few years previous to the *hard winter* a few varieties of pears were doing very well and were being quite extensively planted. In 1872 they fruited so well that several farmers had a surplus for market, and the demand for trees was very great. In the month of June of 1872, several of my trees showed fire blight, and I also noticed it on trees in other places. As the extreme cold of the following winter destroyed all the trees of a bearing age, we are not permitted to accuse blight with having anything to do with their death, and have pronounced them too tender for our climate and but very few trees are now being planted. I do not think that a single specimen of the fruit was raised in the county last year (1875.) Trees from two to five years old are looking very well.

Strawberries.

This fruit is not as extensively grown as it should be or has been in past years. The hard winters, the ravages of the *White Grub* and neglect of cultivation has nearly ruined the old planting, and new ones have partially failed from some cause as yet supposed to be unknown. The above circumstances taken into consideration, the crop of fruit for 1875 was very good.

Raspberries.

This fine fruit is not receiving much attention. The Doolittle Black Cap, although somewhat injured by the previous winter, produced an average crop, and the fruit was of first quality. The Reds were a failure.

Currants.

Never before has there been so abundant a crop of currants raised in this county. They are a fruit that is growing in favor because of hardiness and easy cultivation. The currant worm has not yet troubled us.

Blackberries.

Blackberries are not cultivated to any great extent, and the native wild are not doing sufficiently well to merit notice.

Cherries.

But few cherries are grown. The common Morellos are the only variety any ways reliable. Crop less than average, mostly taken by birds.

Plums.

No tame plums fruited, and the trees seldom survive to come to a bearing age. The native produces an abundant crop of fruit. Some attention is being paid to the cultivation of some of the best varieties. Good plums are in demand in the markets at fair prices. The Desoto is being tried, and promises well. Doubtless the coming plum will be a seedling raised from the best native wild. [And why not? In America the greatest men have come from the ranks of the toiling masses.]

Grapes.

For the perfect development of this valuable fruit the season was unfavorable. With such weather as we usually have in August and September the crop would have been immense; but with the several weeks that we had of cool, cloudy and wet weather, the ripening progressed slowly, and the early frosts ruined a large proportion of the crop; and I have fears that with most varieties the wood has not matured sufficiently to endure this winter. The Concord is most extensively grown, and so far has proved to be the best grape for the people.

New Fruits.

I am not aware that any new fruits of special merit have been brought out during the last year.

Vegetables.

Vegetable gardens have done remarkably well, and I have never known a season in which vegetables of all kinds were better or more plentiful.

Flowers.

The love of flowers seems to be universal, and the cheapness of greenhouse plants, and the choice seeds sent out by Jas. Vick, and others, are making it very easy to gratify that love. Their cultivation is largely on the increase.

INSECTS IN 1875.

White Grub.

The White Grub, the larva of the May Beetle, has caused the most alarm both to the farmer and the gardener. Working under ground and out of sight, the damage is done before their presence is discovered, and scarcely any useful plant has entirely escaped them. Many strawberry beds are entirely ruined, and I have noticed some fruit trees seriously injured by the bark being eaten from their roots.

Borer.

The Flat-headed Borer is at work in the trees that were enfeebled by the winter of 1873, and the young and healthy trees do not entirely escape them.

Codling Moth.

The fruit of the apples and crabs was not as badly injured by the larva of the codling moth as usual. Whether their numbers were diminished by the severity of last winter, or by some insect friend that is coming to aid in exterminating them, I am unable to say.

Beetles.

In examining specimens of apples last summer, I frequently found a small beetle in them and no worm. I would ask older and more learned horticulturists if they have any knowledge of an apple-worm that changes to a beetle, or a beetle that infests the fruit. The saw worm, which was very destructive the previous year, has disappeared.

Grape Worm.

A more than usual quantity of grapes were stung by some insect, and contained a small white worm. This may prove a cause for alarm and great watchfulness should be exercised by grape growers to prevent its becoming a pest by getting numerous. The fruit grower is beset with enemies on every side, ranging in size from the microscopic insect to the six-foot vagabond boys of our villages. We have asked our Legislature to provide us an entomologist; we must ask them to make more efficient laws against fruit thieves; and in the meantime let every one remember that "eternal vigilance is the price of fruit."

FRUIT LISTS.

In conclusion, I present the following list of fruits for this district.

Apples for General Cultivation.

Duchess of Oldenberg, Haas, Fameuse. For trial—Walbridge, Utter's Red, Red Astrachan, Plumb's Cider and White Astrachan.

Pears.

Flemish Beauty.

Plums.

Best natives.

Strawberries.

Wilson, Downer's prolific. Chas. Downing for trial.

Raspberries.

Black caps, Davison's Thornless, Seneca, Doolittle. Red, Philadelphia, Turner.

Currants.

Red Dutch, white grape.

Grapes.

Concord and Delaware.

Siberian Apples.

Transcendent crab.

All of which is respectfully submitted.

JOHN S. HARRIS,
Member of Fruit Committee for First District.

DISCUSSION.

The Turner Raspberry.

Mr. Smith:—The Philadelphia killed with me last winter to the ground while the Turner stood uninjured.

Mr. Harris:—With me also the Philadelphia was killed and the Turner uninjured.

Mr. Wilcox:—With me the Philadelphia withstood the winter of 1872-3 and was killed by the winter of 1873-4.

Mr. Smith said he thought it was a general experience that where

the Philadelphia had failed the Turner had stood. Could not speak certainly about the productiveness of the Turner. It is the earliest to ripen and continues to ripen for a long time. Obtained 50 cents per quart for this when the Philadelphia did not bring 30 cents, but they were marketed with great care.

Mr. Jewell:—Have had it for two years. It is perfectly hardy, multiplies by suckers more rapidly than the Philadelphia. Got a few berries the first year and a few last year, but not enough for a picking from 200 plants. The season is long—six weeks.

Mr. Smith:—Have set all of this kind in preference to Philadelphia, but none yield so much, in so short a time, as the Philadelphia.

Mr. Bunnell:—The Philadelphia stood with me last winter on a light soil with a northern exposure.

Hart's Seedling Strawberry.

Mr. Elliot:—The Society should recognize the new strawberry of Mr. Hart. Mr. Hart has experimented with varieties of strawberries for several years and this is the best he has found or produced. The quality is as good as most of the large varieties, better than the Wilson.

Mr. Smith:—Better than the Wilson, and the finest berry I saw last summer. Mr. Hart says it is more prolific than the Wilson.

Mr. Harris:—Some specimens I received last summer were the best I ever saw.

Strawberry Cultivation.

The paper of Mr. Seth H. Kenney on Strawberry Cultivation was called for and read by the Secretary, after which it was ordered that the paper be abridged by the Secretary and published in the Transactions. It is as follows:

STRAWBERRY CULTURE.

MORRISTOWN, Rice County, Minn., Jan. 9th, 1876.

Mr. President and Members of this Society:

I received an invitation from the Secretary of this Society asking me to write a paper on strawberry culture, and without waiting for a reply, stated that he had already placed my name on the programme, and hoped I would find it agreeable and convenient, &c., leaving me no honorable chance to say no. My love for the cultivation of small fruits is so great, there is so much to learn, and I have made so little progress in this interesting branch of

horticulture, that it is with great reluctance that I present this paper to the Society. I have for some years made the cultivation of small fruits my leading business, and shall have to confine this paper to my own practical experience.

Merits.

I think there is no fruit that will grow so well, almost everywhere and with so much neglect, as the strawberry; and I might add that with good cultivation and protection no fruit gives so general satisfaction, or better returns for the labor bestowed. Without further preface I proceed to the subject in hand.

Age of Plants.

I have always made it a point to set plants of the previous year's growth. The roots of such plants, if grown from young-set plants on good mellow soil, stirred well between the rows with a shovel plow, just before it is time for the runners to take root, will have a light color like the roots of horse radish. A plant that has borne a crop of berries and then transplanted will never yield well.

Preparation of the Soil.

I have become convinced that deep plowing is very important in the cultivation of the strawberry. To prove this I have carefully dug the roots of Michigan Seedling that had been planted one year in hills on good mellow soil, and found the roots had grown down into the earth 12 inches. I have mentioned Michigan Seedling because I raise more of this variety than of any other berry. Every one can see the advantage of having the roots go deep enough to get plenty of moisture in a dry season. I think any ground that will raise a good crop of corn will raise good strawberries. I think ground can be made too rich for most strawberries, but Michigan Seedling is an exception, as I have manured this kind highly with the best results. The best fertilizer I have ever used was wood ashes, at the rate of one peck to the square rod, sifted or spread on when the leaves got fairly to growing in the spring.

Time of Year to Set Plants.

I have had the very best of success in setting plants the last of April. I have set plants in August, September, October and November, and by careful mulching brought part of them through the winter, but I cannot see that there is much gained by setting in the fall.

The Ida.

In setting, pistillate varieties, such as the Ida, for instance, should be set in alternate rows with staminate varieties, such as the Wilson, Michigan Seedling, Early Scarlet, Charles Downing and Nicanor, which are rich in pollen. When placed beside any of these the Ida has many good qualities.

I have grown it for a good many years and can confidently recommend it to fruit growers. It is a rank grower and throws out a good many runners. I set in rows three feet apart and alternating with some one of the above varieties. I cut no runners on this variety and the next season each plant sends up one or two or more tall fruit stems which hold up their fruit better than any other variety. The berries are of fair size, and among the first to get ripe, beginning to ripen about four days later than the Early Scarlet.

They are rather sour but of fair flavor, and the latest though somewhat smaller are the best berries I ever tasted. The experience of other growers is the same in this respect. It is one of the hardiest varieties I am acquainted with and the berries last longer than any other.

Time to Cultivate.

The time to cultivate is before you can see any weeds, especially if the land has not been kept clean before. I would not wait until I could see weeds, it is so much easier to take them when small. This constant cultivation keeps the soil moist in a dry season and saves much work that would have to be done otherwise by hand. Where the plants are mulched I take no plow into them till after fruiting.

Time of Ripening.

The first on the list for four years past was Early Scarlet, a bright red berry and a very good berry. The first sent to market in 1872 was a pallid June 8th; in 1873, June 22d; in 1874, June 19th; in 1875, June 22d. This variety is a prolific bearer, and coming as it does so early, brings good prices. I will here say I have cultivated this variety for fifteen years, and it never has failed but once. One year, from some unknown cause, the vines were barren. The treatment of this variety has been different from other varieties. I set a large bed of them and do not cut any runners; let them cover the ground. The next season, after fruiting, I plow once in 12 inches, alternate strips, and drag it well, and then let them run over the new plowed ground for the next season. Then plow up the strips that were left the year before. After fruiting, I have to pull and hoe a good many weeds, but I think it pays to keep them clean. The length of the strawberry season for the past year was from June 22d to July 14th, 22 days, that I furnished the city of Faribault with berries. The season for table use was six days longer. I have looked over my books and find on June 22d we picked 60 qts.; June 24th, 79 qts.; 26th, 168 qts.; 28th, 226 qts.; 30th, 410 qts.; July 2d, 468 qts.; 3d, 16 qts.; 5th, 736 qts.; 7th, 392 qts.; 9th, 184 qts.; 12th, 177 qts.; 14th, 77 qts.; total for the season, 98 bushels. Most of first two pickings were Early Scarlet. After that the other varieties began to get ripe. The last picking was made on the same day we picked the first Doolittle black cap raspberries.

Varieties.

Michigan Seedling.—This berry tastes much like the Wilson. It is much more productive with me. I plant it for the main crop, and have for quite a number of years, and one year with another it pays the best. The ber-

ries are large and hold their size well to the last picking. It is a very rank grower, and I always plant them in hills 20 inches apart, and pick off all the blossoms the first year, as I do with all kinds when newly set. I keep all the runners picked on this variety except to produce plants. Except the first year it throws out no runners until the plants are done fruiting, which is not the case with any other variety that I am acquainted with.

Charles Downing has a short root like the *Wilson*. Does not stool up in hills enough to make it profitable, except in matted rows. Did well last season. A splendid berry, uniform in size, very fine flavor. Will not stand a drouth as well as some other varieties.

Downer's Prolific.—Not a large berry, quite early. A bluish bloom on the berry leads some people to say it is mouldy. This variety, on rich ground and in a rainy time is apt to mildew. This variety does best on old beds without being plowed up. If I wanted a strawberry bed and to do no work on it after the first year, I would plant this variety. I have a bed that has not been plowed for four years, that last season yielded well. A few *Charles Downing* mixed to help fertilize them makes do much better.

Green Prolific.—Of excellent quality, large, of fine flavor, and planted beside *Wilson* or *Michigan* seedling, have been quite profitable with me.

Kramer's Seedling.—Originated in Iowa. Quite hardy, a blood-red berry of very fine flavor, a rank grower, rather deficient in pollen. Not always a sure crop, but has some seasons done well.

Triomphe de Gand. A French variety. A very fine flavored berry. Rather tender. I have known it to kill when well mulched. Some seasons it does well, but it is a tender variety for this climate.

Hardiness of Varieties.

I have never covered many plants of any kind. My experience warrants me in saying early scarlet is the hardiest of any thing I have found. The *Ida* next, and *Michigan* seedling and *Wilson* next. Last season I had two beds of strawberries that faced the south; one was *Wilson* and the other was early scarlet; the *Wilson*s were about half killed, while the early scarlet were not hurt in the least. One year ago last fall I mulched four rows of *Michigan* seedling heavily with crushed sorghum stalks. I let the mulching remain till I saw the green leaves begin to come in sight. I then uncovered the hills where I thought the plant could not get up through, and let the mulching remain till after fruiting. I never have seen as good a crop. They were larger, nearly a week later, than other rows of the same variety on the same ground. Some idea of the productiveness may be gained from the fact that the picker who gathered them picked 50 quarts in one-half day. I came to the conclusion that mulching paid.

Hills or Matted Rows.

I have cultivated *Michigan* Seedling, *Green Prolific*, *Wilson*, *Kramer's* Seedling and other varieties in hills, while the *Ida* and *Early Scarlet* as before described.

Time to Mulch.

Strawberries need air till the ground is frozen, and then a light substance for mulch is much the best. When the leaves begin to look green I should open the mulch over the plants. A northern exposure, where mulching is not practiced, is much the best, as the snow, one of the best coverings, remains there longer. The best way to keep snow on large fields of strawberries is to plant raspberries every 25 or 30 feet, two rows six feet apart, with the strawberries in the wide spaces.

Crop of Plants.

Taking a crop of plants from a bed of Michigan Seedling diminishes the following crop by one-fourth to one-third. I do not think it makes as much difference with most other varieties.

Receipts.

The average price I received for strawberries in the city of Faribault, in 1875, was 15½ cents per quart. The cost of picking was 2 cents per quart, and commission for selling 15 per cent. The 98 bushels brought, therefore, \$445.95. Deducting cost of picking and commission left \$319.49. There were some other expenses, as cost of delivering, and loss of boxes, which would amount to \$30.00 more, leaving a net of \$289.49. I cannot tell the exact area but think it is about two acres.

Best Varieties.

From my experience I should say the best three varieties for general cultivation are Michigan Seedling, Early Scarlet and Ida. I would not say there are not better kinds. But I have done the best with the three above named kinds, and this result has been reached after testing over twenty varieties.

The Wilson.

There are many people that want Wilson plants. I have tried them for years. The reason I still try them is that people will buy *Wilson plants*. In the first place they have a short root, and cannot stand a drouth well. They have very short fruit stems, so that the fruit soils badly when it rains. It does not hold its size well after the first and second picking. And last of all, I never have obtained two crops on the same bed. It exhausts itself the first bearing season. I presume my views will not agree with many on this berry, but different locations make a difference.

Kentucky. .

I see by the report of the Illinois State Horticultural Society this winter that they recommend the Kentucky. This same variety I tried three years, and then plowed them all up. The same with Jucunda and American Agriculturist.

Col. Cheney.

I am testing Col. Cheney. It is a pistillate and did not fertilize well. After fruiting I wrote to A. M. Purdy, who advised planting the Wilson beside it. Had a few berries that were very fine from this variety.

Soil.

The soil where I have grown strawberries is on a northern exposure, except the beds of Wilson and Early Scarlet, already mentioned. It is a rich loam with a clay subsoil, and was formerly covered with Sugar Maple.

One word more and I have done. If you would make your homes attractive, if you would have good health, plant a good bed of strawberries. It will cause smiling faces and help to overcome many of the ills of life.

Respectfully yours,

SETH H. KENNEY.

DISCUSSION.

Varieties.

Mr. Grimes :—He has not the Downer's prolific.

Mr. Smith :—He evidently has the Colfax.

Mr. Harris :—I never saw a good Green prolific.

Mr. Grimes :—They are good to sell, to fill the basket.

Mr. Smith :—Mr. Brimhall has the Charles Downing, and it has done well with him. It sold in St. Paul at five cents per quart more than the Wilson.

Mr. Brand :—I have a few Michigan seedlings. Set 500 two years ago, and last summer they were the only ones I got fruit from. Also set Charles Downing and — at the same time, and got no fruit from them. The soil was a black vegetable loam.

Mr. Smith :—I get different reports of the Charles Downing from different localities according to the soil.

Mr. Jewell :—I know only what I have seen on other places. Mrs. Brand told me a year ago last summer that the Wilson gave the best crop.

Mr. Brand :—I had then no bearing plants of the others.

Mr. Smith :—Have Boyden's No. 80. The plants made a good growth last summer, but as it was the first season, gave only a few berries.

Mr. Smith :—Have discarded the Col. Cheney and Col. Wilder.

Mr. Bunnell :—The Col. Cheney is a wedge-shaped and fine looking berry.

Mr. Grimes :—We should guard against recommending varieties

from sample, as the berries may be large but the vines not productive. For example, I bought three plants of the Dr. Nicaise for \$1.00, took good care of them, and the second year the three plants produced one berry.

Mr. Wilcox:—I will report from the other side of the river. I used to get from the strawberry king at Knoxville many varieties and try them. I got the Col. Wilder and others. Finally I quit trying and got down to the Wilson, and I now raise nothing else. Would report the yield of Mr. Smith, of Green Bay, who obtained over 400 bushels of Wilson's Albany from an acre. Got myself \$450 from one acre of Wilson's Albany last year.

Mr. Jewell:—Every man who grows for profit has got down to the Wilson. Until the new ones are tried, we will retain the old ones.

Mr. Grimes:—The Charles Downing has been spoken of highly to me by several persons.

Mr. Harris:—I pretend to keep the weeds from only the Wilson and Downer's Prolific, but since I saw the Charles Downing have been favorably impressed with it. I doubt the genuineness or value of the Michigan Seedling, as it was introduced by a villainous-looking individual.

Mr. Pearce:—Mr. Cook is the best cultivator in Rochester, and he considers the Charles Downing the best.

Mr. Smith:—I can't sell Early Scarlet at five cents per quart in the St. Paul market when people can get larger ones.

Mr. Harris:—They are unsaleable after the Wilson comes.

Mr. Elliot:—It is the common experience that the Wilson brings double what the Early Scarlet does. The Wilson is the hardiest and most productive strawberry we have.

Mr. Grimes:—The Early Scarlet is good for preserves, and good to stand neglect.

Mr. Wilcox:—The Charles Downing is a good berry, but too soft for marketing.

The list of strawberries as it stood before was then adopted, with the amendment that we recommend Downer's Prolific for home use, Charles Downing for general trial (14 for and 5 against,) also Michigan Seedling for trial, (9 for and 0 against.)

Varieties Recommended.

The action of the Society on strawberries is therefore as follows:

Recommended for general cultivation :
Wilson's Albany.

Recommended for cultivation by amateurs :
Green Prolific, as an abundant bearer.

Recommended for cultivation for home use :
Downer's Prolific.

Recommended for general trial :
Charles Downing. (14 for, 5 against.)

Recommended for trial :
Michigan Seedling. (9 for, 0 against.)

Hart's Seedling.

A number spoke in favor of recommending Hart's seedling.

Mr. Smith explained that the action of the Society in passing it over was in accordance with Mr. Hart's wishes, who desired to exhibit it at the summer meeting before it was recommended.

Prof. Phelps then invited the Society to hold sessions at the Normal School building, and to be present at the morning exercises of the school the following morning.

The invitation was accepted by a unanimous vote.

WEDNESDAY MORNING.

The meeting was called to order by the President at 10:25.

The Normal School.

The members of the Society had previously witnessed the morning exercises of the Normal School. The order, discipline and training displayed in these exercises delighted every one and called forth expressions only of satisfaction. At a given signal the pupils of the Normal Department found their seats without noise or confusion. At another signal the pupils of the model school entered in three divisions, each headed by its leader. On entering the room each division formed fours, halted, faced about and remained in the aisles during the exercises, after which they formed

twos and marched away under the leadership of their captains. The Normal classes were then dismissed in order to their class rooms. When the hall was cleared the Principal, Prof. Phelps, remarked that to show what could be done in case of fire or other accident, he would bring the pupils all back to their places in the hall inside of two minutes. The signal was given and the pupils appeared, taking their places easily and naturally, and within the time specified. After these exercises the visitors were shown into some of the class rooms, where both teachers and pupils showed a modest confidence and self-possession not easy to assume before a crowd of critical strangers. Had every school in the country a teacher trained in such a school as this, the superintendent in his visits would not find teachers too diffident to answer his questions, or go on with classes in his presence. Order, system and neatness were apparent in the movements of each pupil, and in everything about the building. It is only to be regretted that the means at command are not sufficient to put the surroundings of the building in keeping with the interior management.

Statistics.

A paper or circular from the Department of Agriculture was read and explained. The circular asked for statistics of fruit trees and fruit products. A committee of Messrs. Brand, Grimes and Jewell was appointed to collect and prepare such statistics.

Plums.

Mr. Boxell's paper on the improvement, propagation and cultivation of the Plum was then read by the Secretary, and ordered published in the Transactions.

IMPROVEMENT, PROPAGATION AND CULTIVATION OF THE PLUM.

Secretary Minnesota State Horticultural Society:

DEAR SIR:—Much to my regret, I shall not be able to attend the meeting at Winona, and although I do not think I have any special knowledge of the subject, I shall, in compliance with your request, give you a few notes at random, on the "Improvement, Propagation and Cultivation of the Plum."

Trees.

First get your trees. My first plan was to take sprouts in the spring from trees growing in the thickets which we had marked when the fruit was ripe. Selecting some for extreme earliness, some few for lateness,

and many for large size and fine flavor. I also got sprouts from the cultivated native trees in my neighborhood, which I thought valuable. In this way I started my plum orchard, which I hope to improve by obtaining choice varieties from the fruit growers of our State.

Cultivation.

As to cultivation, plums seem to do tolerable well with or without it on most soils. I think they prefer a rich soil and high culture. A neighbor of mine has a fine plum tree which bears a fine crop of fruit only when he digs about it and manures it the preceding spring. I know plum orchards however, sodded over with grass and uncared for which do quite well.

Planting.

Plum trees may be planted quite close, or as far apart as you like. I have a small orchard planted in the spring of 1871, in rows 12 feet apart, the trees 6 feet apart in the rows. I intended it for a wind break as well as for fruit. I cultivated well and they have done well, and already begin to crowd one another in the rows. I shall remove half of the trees and plant the best of them elsewhere, leaving the remaining trees 12 by 12. I have taken bearing plum trees from the woods, with trunks two inches in diameter and covered with rough bark and moss, cut off the tops close, scraped off the moss and planted them early in the spring, and they soon made fine symmetrical tops and have borne fruit abundantly.

Propagation.

Choice kinds of native plums may be propagated rapidly as follows: Take up roots in the fall the size of a man's finger, greater or less, pack them in dry sand and keep them in the cellar till spring, then cut them in pieces three or four inches long, and plant them three or four inches deep. The roots may also be taken up early in the spring and planted immediately. If the soil is light and dry press it well and mulch. I have not yet grafted any plums myself.

Improvement.

For the improvement of our native plums, I propose that we allow no plum trees bearing poor fruit to grow in or near our orchards. Let them be destroyed utterly. Then let us plant the seeds of our best plums, aiming at largeness of size and sweetness of flavor, and aiming to get rid of that harshness, astringency, or "pucker" that nearly all native plums have, in a slight degree at least, when cooked.

Black Knot.

Now let me tell you what I know about "black knot." Well I don't know anything about it, except that it is hereditary and incurable by any means known to me, but not at all contagious. I could give my reasons for this belief, but I fear the length of my paper is already greater than its importance.

Uses.

In conclusion I mention some of the uses we make of our plums besides eating them from the tree and pared with cream and sugar. We eat them stewed and in pies. The very best develop but little harshness in cooking. We use them pickled and spiced, and in plum butter, jellies and preserves, and for canning. We seal up large quantities in stone jugs, using about one-third enough sugar to make them palatable when first cooked. They improve by keeping, and when opened the next spring they are about sweet enough. In this paper I have spoken only of our native Minnesota plums.

J. W. BOXELL.

DISCUSSION.

Mr. Harris:—The roots should be cut up only in the spring.

Mr. Elliot:—Some varieties require manuring. Harrison's Peach is a shy bearer, but by manuring heavily it produces fair crops.

Black Knot.

Mr. Carter:—I think the "black knot" is contagious.

Mr. Smith stated that Mr. Boxell had set a healthy tree in a grove affected with "black knot" and this tree remained healthy.

Mr. Carter:—Have seen a grove of healthy trees affected over a considerable intermediate space from a grove of diseased trees. Cutting off branches affected does not help the matter.

Keeping Roots.

Mr. Dartt:—Think if the roots are placed in dry sand they will wither. They should be put in moist sand and then they will calous by spring. Must be careful and not use the roots of grafted trees.

Mr. Elliot:—I use sand and sawdust mixed in equal parts and of natural moisture.

Mr. Harris:—By the term dry sand we do not mean perfectly dry sand, but only not wet sand.

Mr. Stewart:—I bury the roots out of doors in the natural soil, covering about a foot deep, and they do not heat or sprout.

Mr. Dartt:—I object to calling it dry sand when moist is meant.

Mr. Jewell:—The point is well taken, and not only that, but a certain degree of moisture is required. I pack in moist sand and then cover with sawdust. May saturate the sand and it will dry out, unless so protected.

Plum List.

On motion, the revision of the plum list was taken up.

Mr. Dartt called for reading of the plum list as last adopted.

The latest action of the Society was to recommend only the best varieties known as native, or belonging to the wild order.

Miner.

Mr. Jewell moved that the Miner plum be recommended for general cultivation.

Mr. Harris:—Would like to know if the nurserymen have the Miner to sell?

Mr. Jewell:—I have not, and do not know of any one who has. Seven years ago I obtained some trees and have not obtained one plum. Moved them two years ago, but they have not borne since, though in spring they are a mass of blossoms. Afterwards I got some from other sources to sell, and these trees set two years later than the first have borne for two years at least. I have spoken disrespectfully of the Miner, but now think better of it.

Mr. Grimes:—Am glad I was not the one to put forth the resolution, lest some one would charge me with ax-grinding. Have had the Miner for several years. Bought ten trees. Some are now nearly a foot thick. Have borne well. Sold seven bushels last year. Sell more readily and bring more than other varieties. Sold mine for \$2.00 per bushel. Have seen one man who wants 500 trees of them. If there is any variety of plum, native or foreign, that is valuable, it is the Miner. It is the latest, and the fruit stands considerable frost. There is no doubt but some trees were spurious when they first came around. But if mine are not genuine then I have a spurious variety that we ought all to have. Got mine of Joel Barber.

Mr. Wilcox:—I also got mine of Joel Barber, and would go a mile to cut down a Miner if they were all like mine.

Mr. Harris:—Had seen the fruit of the Miner at the State Fair, and got a poor opinion of the Miner. But last fall saw some of a different character. Have known of cases of fraud in which sprouts were sold from the roots of grafted trees.

Mr. Jordan:—I bought 200 trees, said to be the Miner, and the mildest winter they killed down six inches, and this winter two feet. Got them from Mr. Budd, of Iowa. A great many were planted in Iowa before the hard winter and they were cut to the ground. I

think I know something of the history of the Miner. On the river bottoms of Illinois there grows a small, bitter plum, that after laying away for some time, becomes agreeable in flavor. The leaf is like a peach leaf, and I think I should know the plums derived from this species by the leaf alone. All Miners here are from this species. I also have the Wild Goose, which also belongs to this species, and is as tender as a peach. Some variety of the same species stands on Mr. Gideon's place, and is called the Miner. These have stood the winter, but the fruit undergoes the same change in keeping.

Mr. Dartt:—The general reputation of the Miner is variable, and it is, therefore, wrong to recommend it for general cultivation. I move to amend so as to recommend for trial instead of general cultivation.

Mr. Jewell:—Have never known the Miner to kill after the first year. Doubt Mr. Jordan's ability to tell the Miner by the leaf alone.

Mr. Smith:—Think the diversity of opinion due to whether the tree is a genuine Miner or not. I got six trees from Mr. Sherman, of Rockford, Ill., and these six trees proved to be of six different varieties. I afterwards got some for a friend from Mr. Vail, and he showed beautiful fruit produced from these last summer. We should not discard the variety because the tree is not always genuine.

Mr. Grimes:—The Miner is from the Chickasaw plum, of which there are many varieties that cannot be distinguished by the leaf alone. It is tender only when young, and after that hardy. Mr. Gideon's are not Miners, as he himself confessed when he saw mine.

Mr. Jordan:—All the so-called Miners are similar in leaf, and so much like the Sloe as to show their parentage. I got mine from Mr. Miner himself.

Mr. Carter:—I have three old trees, and hence supposed to be genuine. The leaf is not like a peach leaf. Know no wild plum that is hardier. The best plum grown in Minnesota.

Mr. Philips:—I obtained six Miner plums from three different men, and one of them proved genuine.

Mr. Carter:—Before it is ripe the fruit is a magenta color, and when fully ripe, crimson.

Mr. Hart:—My experience is that it is worthless in Minnesota.

The Miner plum was then recommended for trial by a vote of 13 for and four against.

De Soto.

Mr. Jewell moved to recommend for trial the De Soto, which was seconded by Mr. Harris. It bears young and bears heavily, but the size is not as great as was expected, and in quality it is not as good as others, second rate.

Mr. Elliot:—Three years ago I bought four trees for \$5, and planted them. The second year they bore a few and last year they were loaded. From the four trees, I got half a bushel of fruit. The tree is extremely productive and perfectly hardy. The quality is not as high as that of the Miner or Harrison's Peach. The fruit is of good size, yellow with a red cheek. It is a soft plum. It comes from Mr. Hale, of Iowa, and is a seedling from the native plum. Expect to have twenty varieties in fruiting next year. Consider the De Soto a good plum. The Harrison's Peach, unless highly cultivated, is not productive. Mr. Wilson, of Richfield, had a seedling at the State fair that I consider of promise. Some plums have a sour pit, with an astringent skin, not noticed when first taken into the mouth.

Mr. Harris:—The De Soto originated in Wisconsin, and Mr. Hale got his stock by getting several large trees.

Mr. Brand:—We should make it a principle not to recommend a variety until we know something about it, and nurserymen should not sell it until they know it at sight.

Mr. Elliot—No spurious trees of the De Soto have been sent out. Mr. Hale is honest with it and deserves credit for it.

The De Soto was then recommended for trial by a vote of 10 for and 8 against.

Mr. Harris:—Am satisfied that better plums grow wild in every county than the Miner or De Soto.

Natives.

Mr. Dartt offered the following resolution:

Resolved, That in view of the vast number and variety of native plums of great excellence in our State and the uncertainty of getting a genuine article by importation, therefore we recommend that our people depend principally upon our own native thickets for a supply.

Mr. Buck wanted to know what some of the excellent varieties were.

Mr. A. C. Hamilton hoped to see the resolution adopted. He was impressed with the value of the native plum while driving

through the Chatfield woods last summer, and seeing fine bearing trees not over four feet high.

Mr. Dartt believed that the recommendation of certain varieties opened the door for unprincipled agents to impose fraudulent varieties upon the people.

Mr. Jewell believed that the Society should recommend approved varieties else how should any improvement be made in the plum?

Mr. Wilcox thought the resolution was just the thing, and if nurserymen were so sensitive about their honesty, why let them build up a reputation for honesty that will stand among the people. He knew to his cost that there were dishonest nurserymen. He was a nurseryman himself; had made mistakes, but believed he had done it ignorantly. When he got so that he condescended to dishonest practices with malice aforethought, why then put him down.

Mr. Jordan moved to amend the resolution to read "native plums" instead of "native thickets." The amendment was adopted and the resolution as amended was carried.

Plums Recommended.

The action of the Society on plums was therefore as follows:

Resolved, That in view of the vast number and variety of native plums of great excellence in our State, and the uncertainty of getting a genuine article by importation, therefore we recommend that our people depend principally upon our own native plums for a supply.

Recommended for Trial.

Miner (13 for, 4 against.)

De Soto (10 for, 8 against.)

WEDNESDAY AFTERNOON.

Meeting called to order by the President at 2 o'clock.

Plums.

Mr. Jewell moved the following resolution:

Resolved, That to procure better plums than we now have we recommend the planting of the *pit*s of the best varieties of native plums.

Adopted.

Mr. Jordan :—Plums occupy a prominent place in my business. Am more successful with those obtained from the gardens of persons who procured them from the woods, and from the seeds of those cultivated in gardens. The Waldron plum was from a plum tree that grew in the garden of Mr. Farmer. Of Mr. Fisher's plums one is called the Peach plum. He says it is free from the bitterness of the wild plum, and has a peach flavor. I procured sprouts from these and planted the seeds. Plum butter made from the produce of these was almost like peach butter. This stands, with me, at the head of any in the State. Have fruited about fifty varieties.

Methods of Propagation.

Mr. Stewart then read his paper on methods of propagation to secure hardy trees, and it was ordered to be published in the Transactions.

METHODS OF PROPAGATING TO SECURE HARDY TREES.

Adaptation.

In all apple-growing countries we find that no one variety is valuable only in certain localities. Its value in any new location is only ascertained by years of experience.

Varieties that grow and do well in eastern States, where they have deep snows and moist atmosphere, are worthless here in our dry climate, where we frequently have no snow until the severest winter weather is past.

Root Killing.

Root killing of the apple by the severity of the cold is not known there, while here, within two hundred miles of Winona, there have been millions of trees root killed within the last fifteen years.

This should teach us a lesson. It should teach us not to use tender seedling roots to propagate our hardy varieties on. Some are recommending *Siberian crab* seedlings, which are but little better, as seventy-five per cent. of them will winter kill here.

Prevention.

We have trees that will produce hardy roots by layering or mounding, as is done with the quince or Doucin apple, or they may be had by grafting the variety wanted for stocks on seedling roots. When grown one year, most of them will have thrown out roots from the scion. They can then be taken up, trimmed back so that there will be no root left except those that have sprung from the scion.

By so doing we can have a stock to propagate our hardy varieties on,

that there is no danger of winter-killing; that can be used in grafting the same as seedling roots, or it may be planted in the nursery row and top-worked at any desired height.

A. STEWART.

DISCUSSION.

Mr. Harris:—These principles are steps in the right direction. The loss by cold is not above ground alone, but also below. This has not been admitted because some trees were killed that were covered root and branch. We must, however, have iron-clad trunk and top and root.

Mr. Wilcox:—I disagree with the statement that 75 per cent. of the seedling crabs fail. Crab roots are perfectly safe, but we use also the long scion to secure any additional safety that can be got.

Mr. Stewart:—I base this statement on my own experience and observation of my neighbors.

Crab Stocks.

Mr. Jewell:—How to get hardy roots is the question. Crab roots are not of uniform hardiness; some are tender and others hardy. Transcendent roots are hardier than Siberian crab roots. Why, then, use the tender crab root? Mr. Wilcox plants 18 inches deep, and then the scion takes root. Then why use crab roots when they are worked upon with difficulty? Why not work on apple roots, using the long scion and setting deep in the orchard. It may be necessary to use crab roots for grafting above ground, but then take a hardy crab to begin with.

Mr. Wilcox:—If we were *sure* of roots from the Transcendent there would be no use of working on crab roots, but we are not sure. So, as the crab root is hardier than apple root, we get this advantage of hardiness by using crab roots. (In answer to a question:) My soil is sandy, with a gravelly subsoil at a depth of about 18–20 inches, but it is not always reached in setting trees. We set deep, to be sure of getting roots from the Transcendent cion. We have got the result desired, and last summer the Transcendent fruited, as also some apples budded into it and making their second years growth.

Cause of Injury in 1872–78.

Mr. Pearce:—I doubt if the cold did the work in '72–8. Trees

protected by a grove, and snow drifted over them seven feet deep, so that the soil probably did not freeze that winter, all were killed. Duchess, Haas, Tallman Sweet, standing under these conditions, were killed.

Mr. Hart:—Slow growing roots cause slow growth of the top, and this makes the tree hardy. Had the same experience as Mr. Pearce. Would shovel away the snow if it were four feet deep about the trees.

Mr. Jewell:—Not one of those who believe the destruction due to some unknown cause believe that the trees root killed. In December, 1872, at one time the thermometer was 30°—40° below zero before any snow fell, and then it was that the injury was done. Hardy roots is our text. The root should be short and the scion long. Facilitate getting roots from the junction by letting the scion be larger than the stock, and projecting beyond it at one side.

Mr. Hart:—Snow fell November 10th, 1872, and did not all go off until spring from where it drifted behind fences.

A Member:—Deep planting is the correct principle.

Mr. Jordan:—I know of no case in which trees died when the ground was not frozen.

Mr. Jewell here introduced Mr. Tuttle, President of the Wisconsin State Horticultural Society, who had just entered the room.

Mr. Dartt:—Some scions are more difficult to root than others. The Tetofsky fails. Have set it 18 inches deep for the express purpose of getting roots. Trees have been injured in the top more than the root. In the former case the tree hangs along, but in the latter it dies at once. It is easy to protect the root by mulching. With this precaution we need not be so much troubled about hardy roots. We want hardy tops, which will not injure in the fruit buds. Some will do well so far as the tree is concerned, but the fruit buds kill.

Mr. Hart:—In the spring of '56 I planted some trees; as snow came early there was no frost in the ground that year. The tops killed but the roots lived.

Mr. Stewart:—Of my own crab seedling roots on loamy soil only one in 50 lived.

Mr. Brand:—95 per cent. of the crab roots live in my experiments. It was the cold and dryness of December that killed the trees in '72-3. The last of December there was no moisture in the soil, and the day before Christmas the thermometer stood 40° below zero.

Mr. Pearce:—Fuller, of New York, says it makes little difference

whether the mercury be 10°—15°, or 35°—40° below zero. A root that will stand in the one case will stand in the other, and therefore I am not so particular about what roots I graft on.

Deep Planting.

Take nature for my guide as to depth to set trees. Set a little deeper than they stood in the nursery. Don't want to set down in coarse, cold soil. There the roots spread near the surface, while only in loamy soil do they strike downward.

Mr. Jewell:—We do not follow nature in most respects. It is by a departure from nature that we attain desirable results.

Moved by Mr. Elliot, and carried, that no one be allowed to speak more than five minutes on any one question.

Mr. Scott would like to have the sense of the meeting as to his question, deep and shallow planting. Would like to know also, any one has noticed the difference in this respect between trees growing naturally here and in the Eastern States?

Mr. Tuttle:—At the root is one form in which trees kill. In 1869 the trees were injured by cracking of the bark near the surface of the ground. In '72-3 trees were killed at the root, and in '73-4 at the top. It is desirable to set deeper than we now do, but 12-18 inches is questionable. Mulching will do if attended to. A good method of protection is to throw soil up about the trunk before freezing, and mulch after ground has frozen 5 or 6 inches deep. Cannot then always secure the tree, because they sometimes kill at the top.

It was moved to recommend planting trees 6-12 inches deeper than they stood in the nursery.

Mr. Harris:—I cannot do so on my clay soil.

Mr. Dartt offered to amend so as to read two inches on heavy soils and four inches on light soils.

Mr. Jewell likes the discrimination, but four inches is not enough on light soil.

Mr. Dartt:—Two inches on heavy soil is all that is safe, and four inches will do for light soil.

Mr. Bunnell:—If the tree requires moisture, as I believe, to keep from root-killing, why not set deep where the roots will find it?

Mr. Pearce:—Would set 1-4 inches deep according to the size of the tree and support with a stake. Set as early as possible.

Mr. Jordan:—Should plant 8-10 inches deep on clay soil. Would favor recommending setting 2-18 inches deeper.

Mr. Hart:—The nurserymen want us to plant deep so they may

sell us more trees. It is no use to plant where the roots can get no heat, air, and sunlight influence.

Mr. Wilcox gave an invitation to the members of the Society to visit him next fall and see the results of his method of deep planting.

Mr. Scott:—Have not set many trees in Minnesota. Have done some planting, and some trees set 10 inches deeper than in the nursery are now worth double what they would have been set in the ordinary way. We, as a Society, need to recommend some depth.

Mr. Dartt:—Perhaps the difference is explained by the deep digging and pulverization of the soil, and not alone by setting deep. Should not overdo the thing, 2-4 inches is enough and will not bend nature too much.

Mr. Philips:—Glad I came here. Have been considered a fool for planting 3,000 trees. It is some consolation to find some one with 7,000. (This number was mentioned by a previous speaker.) With such a multiplicity of theories each man must try for himself and make conclusions for himself.

Mr. Grimes:—Think we had better recommend common sense.

A motion to lay the question on the table was lost, 4 to 11.

Mr. Brand:—Would set on clay soil 6 inches deep, and have the top of the root 10 inches below the surface on light soils. There is great carelessness among farmers in the setting of trees.

Depth to Plant.

Mr. Jewell moved an amendment recommending two to six inches in clay and six to twelve inches in light soil, which was carried by a vote of 10 to 5.

The motion was then carried by a vote of 9 to 5, and reads as follows:

Resolved, That we recommend the planting of trees from two to six inches deeper on clay soils and from six to twelve inches deeper on light soils than they stood in the nursery.

The following discussion on hardy trees was had after the reading of Mr. Martin's report, and was ordered inserted at this point:

Crab Roots.

Mr. Wilcox:—I had an orchard before 1872-3 that Dr. Stickney said was the best in Wisconsin. That winter swept away most of my orchard and 60,000 trees from my nursery, though part of the

nursery stood on clay soil. In the spring I went out one day near night, dug up several trees and found the roots dead. Iron-clads as well as half hardy trees were much injured. None escaped entirely. It was a singular fact that three Transcendents were killed while a Red Astrachan, standing in the center, lived. All this was owing to the destruction of the roots. I therefore, advocated grafting on crab roots. Dr. Stickney, however, said that of 100,000 so grafted but 60,000 grew, and only 20,000 made good trees. At the meeting of the Wisconsin State Horticultural Society one year ago, I showed good trees on crab roots. Dr. Stickney said he hoped the experiment would be continued. Recently Dr. Stickney has said "must graft on crab roots."

Root-killing Elsewhere.

In September last I met a man who lived west of Keokuk and who began to flatter me because I lived, as he said, in a place where there was snow to protect the roots. This man was going to set long scions and plant deep. I said I had no faith in it without the hardy root. Root-killing is not confined to this latitude. A man 300 miles south of us lost 200,000 trees a year ago this winter. My plan is to graft the Transcendent into crab seedlings, use also long scions and set deep. At two years from graft bud into the branches thus grown.

Blight.

M. Elliot:—What will you do with the Transcendent when it blights? The Transcendent is one of the worst to blight.

Mr. Wilcox:—True, but as long as nurserymen propagate as they do we must suffer some. The blight, however, is passing away.

Mr. Hart:—I bought of Mr. Wilcox a dozen trees eight years ago, and seven or eight of these are the only sound ones I have, and they were not worked in this manner.

Mr. Wilcox:—I have no faith in them. If not dead now, they will be dead before long.

Mr. Jewell:—Crabs, like apples, differ in hardiness. The seedlings are therefore not reliable. It is more desirable to get the Transcendent on its own roots. But still I think there are other crabs better than the Transcendent. Do not believe the blight is leaving. Have dug up or girdled all my Transcendents. All I had left was the remnants of two blocks between which stood a block of Tetofskys. The blight swept across from one block of Trans-

cendents to the other, and I lost 1,000 Tetofskys in this way. Have never seen a Tetofsky blight except in proximity to a crab. Would not encourage the using of Transcendents in any quantity. Last season was cold, and hence there was not so much blight.

Better than Transcendent.

Mr. Wilcox:—Saw the blight as bad as ever last season. Would like a better stock than Transcendent. I think perhaps Whitney's No. 20 may be such. Do not think Maiden's Blush is iron clad.

Mr. Jewell:—I agree with Mr. Wilcox about the Maiden's Blush. The Early Strawberry is, however, superior to the Transcendent in every respect.

Adaptation to Crab Roots.

Mr. Jordan:—As to top working on crabs, no one crab, as a rule, will answer as a stock for apples; but some varieties of apples will work well on some varieties of crabs. Only one is a success on the Soulard, and that is the Red June. The Red June on the Transcendent grows much larger than the stock. The Orange Crab works well on the Soulard. We shall not find a crab stock suited to all apples. The Wealthy works well on the Transcendent, as also does the Melinda and Rollins' Russet. But a majority of apples fail on the Transcendent because they grow much larger than the stock. We must find a variety of crab for a stock for each variety of apple.

Mr. Wilcox:—I would not be understood as recommending the *Transcendent* for double working.

Mr. Dartt:—My experience confirms Mr. Jordan's; there is no general crab stock for working all varieties of apples upon. We must find out what variety of crab is best suited for working certain varieties of apples upon. The Tetopsky works well on the Transcendent.

Mr. Jewell:—The stock should be hardy and free from disease.

Agricultural College Farm.

The report of the committee to visit the Agricultural College Farm was then read by Mr. Harris and ordered to be incorporated in the Transactions. It was as follows:

REPORT OF COMMITTEE ON CONDITION OF AGRICULTURAL COLLEGE FARM.

Mr. President and Gentlemen of Minnesota State Horticultural Society:

The University.

On the first day of July, 1875, the undersigned as a committee of this Society, paid an official visit to the State University and University Farm. We find the University to embrace a number of schools so planned and arranged as to form a very compact University system and each school to be headed by enterprising and efficient professors.

We had the pleasure of being conducted over the buildings by President Folwell and some of the professors. The library contains more than 10,000 volumes and is continually receiving additions, and is so well arranged that any work called for can be found without delay. The museum contains a great variety of useful inventions, interesting specimens of mineralogy, &c., and is fast becoming a valuable feature of the Institution, and in the Agricultural department, under supervision of Prof. Lacy, a fine collection of seeds, grains, grasses and woods are being made.

Agricultural Department.

The buildings to be used for the Agricultural College were not entirely completed but would soon be ready for occupation and the use for which they are designed. This department is designed to give the students special training in the sciences pertaining to agriculture, including their practical application. Chemistry, botany, landscape gardening, horticulture, arboriculture and entomology are among the studies to be pursued, and reduced to practice. A convenient glass structure has been erected for the propagation and growing of plants, flowers, &c.

Farm.

The farm is not very convenient to the University, not because too distant but because of the quantity of loose sand that must be traveled over to reach it. No doubt the farm may be a good one for agricultural experiments, for when a student has become so well educated that he can make it produce paying crops he is safe to make a living at farming upon any part of the habited globe, but it does not strike us as being a favorable place for the successful pursuit of horticulture. The soil that is being used for horticultural purposes is mostly a light sand, and we were informed had been cropped for fourteen years without the use of fertilizers of any kind, and had become so impoverished that it would not produce good weeds.

Garden.

The garden department is under the supervision of W. T. Scott, and from the system, neatness and good cultivation that is seen on every hand, we are inclined to pronounce him to be the right man in the right place.

Nursery.

A small nursery has been started for the purpose of growing trees for the farm, and scions of every new variety will be tested with a view to their hardiness and other desirable qualities. The enterprise is a worthy one, and we trust that those who are fortunate enough to raise good seedlings will have them tested here before throwing them upon the market. We found a great variety of strawberries, raspberries, blackberries, currants and grapes growing in the Experimental department, some to test their hardiness and others to test the virtue of various fertilizers and methods of cultivation, but they have not been out a sufficient length of time to enable us to come to any definite conclusions about them, but if the finale will no doubt be the gaining of much valuable information for the State. Considering the soil and location and short time since the experiments were commenced, the prospect is encouraging. It is in the vegetable garden where the greatest advance has been made and the best results attained. From the numerous labels and number of stakes that are seen on every side, we infer that hundreds of experiments are being carried along with system, and that almost every edible vegetable known to the gardener had a place there, and the value of various fertilizers is being tested. Enough has already been accomplished to determine the best and most profitable varieties for growing in the Northwest, and also to prove that fertilizers applied to the soil, and thorough cultivation given, increases the yield and improves the quality of vegetables; also, that vegetables grown from seeds raised here are of better quality and come to maturity earlier than those from seeds raised in a more southern latitude.

We most heartily approve of the efforts that are being put forth by the officers and professors to place the University in a condition to rank with the first in the Union for the scope of instruction given, and recommend them to the confidence of the citizens of this great and growing State.

Our thanks are due Professor Lacy for conducting us over the farm and entertaining us with descriptions of the experiments that are being tried and we recommend that this Society pass a resolution pledging aid and encouragement in donations of seeds, plants and trees for the experimental gardens and greenhouse, and that the superintendent be requested to make a report in abstract at each annual meeting of this Society.

We further notice that at the last State Fair, held at St. Paul, Sept. 14th to 18th, 1875, the exhibition made by the University was remarkable for being the fullest and most complete show of vegetables ever made in this State. The laws of the institution debar them from receiving any premium except *honorable mention*, which is well deserved.

JOHN S. HARRIS,
Chairman Committee.

Garden Vegetables.

The report of Mr. Scott, as chairman of the Committee on Garden Vegetables, was called for and read and ordered to be published in the Transactions. It was as follows:

REPORT OF COMMITTEE ON GARDEN VEGETABLES.

MINNEAPOLIS, JAN. 15th, 1876.

*To the President of the State Horticultural Society, St. Paul :**Horticultural Literature.*

DEAR SIR :—If some one would gather from horticultural literature all that has certainly been known, in the theory and practice of gardening, the work would be of immense value. The attention of the Society is called to the fact that we have not a work of this kind. It is, to say the least, not pleasant for a committee to report what they may think to be new and find that it is like a tale twice told, and yet the fact is, it must be new to many of us, or we should not hear so often the query, " what kind of soils are best adapted to various kinds of fruits and vegetables; what the best mode of cultivation, and the varieties best adapted to our soil and climate." That we hear these and similar questions almost every day—we gladly report as an increasing interest in new and improved varieties of vegetables.

Object.

The object of gardening is that we may have pleasure and profit thereby. The chief source of pleasure is to attain the highest perfection, to assist nature in the process of furnishing food, and the instruction we receive while thus engaged. If we fail to realize the importance of the first, gardening for profit must and will be a failure.

Statistics.

We are unable to give the exact amount of garden seed imported and raised in our State; neither can we give the amount of vegetables grown, but we do find that each year the demand has increased, and the present year the increase has been beyond the average of any of its predecessors, while a visit to the St. Paul and other markets show that the quality has improved with the demand, and are now supplied with vegetables equal to, and in some respects superior, to the eastern markets. Together they represent a cash value of thousands of dollars.

Transplanting.

The remarkable effect of transplanting on the growth and habits of some kinds of vegetation is worthy of notice. In a small flower garden on the Experimental Farm the third transplanting gave a greater number, and more perfect flowers. The effect was even more remarkable in the cultivation of vegetables. In the Experimental Gardens on our State Farm the third transplanting increased the size of *head lettuce* one-half over one transplanting, and the corresponding varieties were improved in that respect—cabbage, celery, cauliflower, broccoli, each showed a marked improvement by the third setting.

Peas.

New peas continue to attract attention. Messrs. Carter, Veitch, and others, in England, as well as in our own country, seem to have exhausted the superlative, and the end is not yet, and in truth, the improvement is simply wonderful. In a trial on the above named garden of twenty varieties, mostly new, and, we add, good, the Kentish Invicta and Blue Peter, as early peas, are worthy of notice; while Eugenie, Blue Imperial, Carter's Surprise, Veitch's Perfection and McLean's Premier, have so many good points, that we feel like responding to the cry of our English cousins, "Eureka!" Whether they will continue to maintain their good qualities, time will determine.

Crossing and Selection of Seeds.

We present with this report two specimens of evergreen sweet corn, with all the fixed characters of standard varieties. No. 1, the product of a cross of the common field sweet corn and white dent, one cross, time six years. No. 2, common field sweet corn crossed with early sweet corn; seed selected; time seven years; result, inferior to none on the list.

Potatoes.

Results of experiments commenced in seventy-three. Perhaps there is more interest felt on this subject than that of any other connected with the farm or garden. We are all of us acquainted with the name of some variety that has run out, or, in other words, failed to produce a reasonable amount of large potatoes in proportion to the number of small ones. From the lists, containing hundreds of names, said to be of wonderful value, we have but a few left that are worthy of recommendation.

In an ordinary field of potatoes, some are found to be coarse and of inferior quality, and will not transmit the original quality. Others are immature, and cannot be expected to produce the best results. A few only in each hill are fit for seed. Eyes planted from seed and stem ends show a marked difference when planted separately, for three years, in favor of stem ends; yet the experiment shows a far greater difference and improvement, where an equal proportion of eyes are planted in each hill, from stem and seed ends; the result shows that while the potatoes from the seed end are inferior in quality to those of the stem end, that both grow small by degrees and beautifully less each year, and give the first signs, viz.: (a greater number of small ones and less of large ones) of *running out*. Imperfect seed, poor soil, and the usual way of cutting and selecting the seed, will cause, in time, any variety to be branded as worthless. A change of location, the very best conditions of soil, together with a judicious *selection of seed*—cutting lengthwise if cut at all—will, we believe, not only maintain and improve the good qualities of the Early Rose, Peerless, Late Rose, Compton's Surprise, Early Ohio, Extra Early Vermont, Brownell's Beauty, Snowflake, and other valuable kinds, but that the Neshannock, Fox Eye, Carter, and many others, said to have run out, may be made equally productive and good. In this connection the

Peerless and Early Rose potato seem to be adapted to all kinds of soils; both seedlings from one seed ball, from an inferior potato, the first named—not the best—but one of the best—is a better potato at this time than five years ago, in every respect; the latter, in some localities, is equally good; in others the never failing sign shows that our main dependence in past five years, may fail.

Early Bush Beans.

The White and Black Wax are recommended for quality—Early Six Weeks and Early Rachael for general cultivation; the last named is also an excellent bean when ripe.

Pole Beans.

Having carefully tested fourteen varieties we would recommend Marblehead Champion and Giant Wax as being the two best pole snap beans—the former very early, the latter an evergreen. The Concord and Sleva or frost bean are, at least, equal, if not the best, to any of the others; while the Cranberry will be found to be a keen competitor of the Concord. We would add here that we hope in time to place the Lima at the head of the list.

Early Cabbages.

Little Pixie—the earliest, very small solid heads. Jersey Wakefield and Winningstadt—excellent in all respects, we find nothing better in the list of early cabbage.

Late Cabbage.

In the large list of names, the Premium Flat Dutch, Stone Mason, Fother's Improved Brunswick and Drumhead give general satisfaction.

Sweet Corn.

Early Minnesota—earliest. Early Selected—best. Crosby's Early and Moore's Early Concord—good.

Cucumbers.

Earliest—Early Cluster. Most productive—White Spine.

Onions.

In a list of six varieties, the Large Red matures first, Yellow Danvers, second; White Portugal, third.

Squashes.

For early summer squashes, the Early Scollop Bush is perhaps equal to any other. The new squashes, Butman and Marblehead, may improve on closer acquaintance. So far, we fail to discover any superior qualities on comparison with the Hubbard.

Tomatoes.

Having tested twelve varieties—including nearly all the new *very best*—we believe the Canada Victor, Hathway, and Gen. Grant will be found equal to, if not superior to all others for table and cooking purposes, while the pear-shaped Yellow will be found to be the best for canning and preserving.

Sweet Potatoes.

That sweet potatoes may be grown of good market size is true. That the quality will not always be satisfactory is also a fact. To those who wish to succeed, the Southern Queen is most desirable.

Cauliflower.

Our climate and soil seems especially adapted to the late varieties of cauliflower. We would recommend a northern exposure or slope for this crop as well as late cabbage.

Celery.

Of all garden products we find this the most difficult to grow successfully. As a rule clay subsoil is essential to success, sandy soil the exception. In eight varieties, we find Boston Market the favorite.

Egg Plant.

Early Purple, best.

Lettuce.

Early Butterhead, Hanson and large India give universal satisfaction. In a large list of names we find others equally good, but none better.

Beets.

Egyptian, Early Bassano, Dewing's Blood Turnip and Bastian's Blood Turnip, are known to be among the best for early varieties, and equal to any for late or winter use, when planted for that purpose.

Melons.

Perhaps, all things considered, Phinney's watermelon is the most profitable, for home as well as market purposes; of good quality and early.

Special Fertilizers,

commercial especially and otherwise, adapted to various kinds of vegetables. Very little attention has yet been paid to the application and results of the different fertilizers so extensively used in Eastern States. We believe it to be a well established fact, that well rotted stable manure supplies in a great measure the essential elements required by vegetables to produce

the best results; at the same time we are well assured that the supply is limited, and to some other source we must look for plant food.

Judging from the immense amount of fertilizers manufactured and used in the older settled States, and in Europe, together with the thousands of tons of guano, we are justified in the assertion that they must be our main dependence in the future, as aids indispensable in successful gardening.

W. T. SCOTT,

D. A. J. BAKER,

Committee on Market Gardens.

DISCUSSION.

Mr. Harris:—As a Horticultural Society we have not given enough attention to vegetables. We need a garden book for the masses which is not yet published. Henderson's "Gardening for Profit" is three times out of four a damage to the man who uses it. For example Mr. Kramer, of LaCrescent, followed it in manuring very heavily for cabbages. The consequence was they grew all to loose leaves instead of forming heads. But a couple of years later the ground so manured produced a splendid crop. In another case, a hotbed was prepared by mixing rich pig manure with the soil and the man bought his plants that year. Let us devote more attention to garden vegetables hereafter.

Cutting Potatoes.

Mr. Scott:—There is not much poetry in gardening but a good deal of solid comfort. I have found that, by using seed from the seed end of the potato they run out in about three years, and are also inclined to rot. I have found, also, that potatoes cut for seed are better than whole ones. This is contrary to the experiments of others where the best results were obtained from whole potatoes. The explanation is to be found in the difference in the soils upon which the two experiments were made. The selecting of seed is a very important point, for we can get in this way almost any characteristic we want.

Early Tomatoes.

Mr. Elliot:—This is a subject I have been interested in for twenty years. There are several points of importance connected with it. The selection of seed is one of them. When new kinds come around they are often adulterated with poor kinds, the vitality of which has been destroyed. The potato is a subject of interest and I would

like to see the manner of cutting, as mentioned, explained by Mr. Scott.

Have been informed of the discovery of a new way of growing and ripening tomatoes to get them into market 10-15 days earlier than by any other way, but the details were a secret. Earliness is a very important consideration and forcing will yet become an important branch of business about our cities.

Mr. Grimes:—Glad to see the vegetables placed on the table. It is a subject we cannot afford to overlook. Vegetable gardening stands intermediate between fruit growing and farming. Would like to have a committee to report on the vegetables as well as upon fruits. Potatoes I cut first lengthwise, and then cut down to one eye to a piece. Have been interested in potatoes, and have tried many varieties. Was first to get the Early Rose in my section.

Varieties of Potatoes and Peas.

Mr. Scott:—(In answer to questions.) There is not much difference between Extra Early Vermont and Early Rose, in value. The Early Ohio gave no small ones, and is of great promise. Late Rose promises to be good for late. Veitch's Perfection pea is very productive, and a good late pea. Early Caractacus was the earliest of all, and Blue Peter the best early pea, considering all points.

Mr. Hart:—Is the Snowflake potato of good table quality? It is not so with me. I got one pound and grew 11½ bushels from it.

Mr. Scott:—The quality of the Snowflake is good. Canada Victor tomato was earliest. Hathaway's Excelsior was a little later than Victor, but best in several characteristics.

Mr. Dartt:—I had a variety of potato called the White Rose, which was great on the yield, but not of good quality.

Mr. Smith:—I got the Late Rose from Mr. Campbell, of Ohio. It produced great vines, but cannot say as to yield.

Mr. Scott:—(In answer to question.) Hathaway's Excelsior and General Grant tomatoes are more productive than Canada Victor.

Lima Beans.

Mr. Harris inquired about the improved Lima Beans advertised by Dreer. Had grown Lima Beans and raised a great many. (No one knew about them.)

Mr. Smith gave his experience last summer in raising Lima Beans.

Etna Bean.

Mr. Hart inquired if any one knew anything about the Etna Bean, represented as something new.

Mr. Jewell:—The Etna I suppose to be the same as Hale's Eureka bean. It sometimes produces very heavy and sometimes does not. It is a small white bean.

Transplanting.

Mr. Harris asked if any one had observed benefit from transplanting cabbages in the seed bed before setting in the open soil.

Mr. Elliot:—Have done so with early cabbage with good results. With tomatoes the benefit is more marked still. The care and management of tomatoes after they are planted out is also of importance. One method is to set early, train to stakes four feet high, and prune off all vine outside of the blossoms. In this way we get a great crop for the space occupied.

Asparagus and Cauliflower.

Mr. Smith:—Asparagus ought to be planted more generally among the people.

Mr. Harris:—I sometimes get the best heads from Extra Early Erfurt cauliflower, sometimes from Early Paris, and sometimes from Le Normand's, according to the weather at the time of heading. Asparagus is not more generally planted because the planting as generally described is such a difficult operation. A good enough bed need not be so much work. When I came to Minnesota I sowed seed on soil with only ordinary preparation for crops, and afterwards gave a dressing of manure to the surface, together with rubbish from the house, and now the bed is about four inches above the general level and it is just as good as one made later and dug deeper.

Mr. Smith:—I dug two feet deep and applied 800 loads of manure to my first bed. I cut it closely and late in the season. Next planted one-eighth acre, dug it three or four feet deep, and applied 300 or 400 loads of manure. From these beds I sold last year 1,206 doz. bunches. But they had been dressed with manure, gypsum and ashes, and six barrels of salt. It paid as well as anything. Would not be without an asparagus bed if I had only 50 feet of land. Would plant in that case 2x3 feet and manure in the ordi-

nary way. It will not, however, cut so long each season. Cut last year up to 16th of August. Must, however, feed the roots if you cut so close and so long. Have sold from one-third acre \$600. Cut under the ground so that the stems are white. My customers want it so, most of them. In this way the ground must be kept light. I dug it in the spring, and hacked it with a pronged hoe after every rain. The largest cut was 125 dozen bunches in one day.

Mr. Elliot:—Have a bed 50x60 feet, on which I put 40 loads of the best manure. It did well till within a few years, when I quit manuring it. Have another field set by ploughing furrows four feet apart and setting plants three feet apart in the row. I cut to suit customers. Most of them want it cut at, or just under the surface. The bunches weigh about three to the pound. Brought 50 to 75 cents per dozen last year. No vegetable produces so much per acre as asparagus. This field cultivation is the best for farmers.

Mr. Smith:—Have heard of a bed 125 years old, which is good yet. Can't get it out of the land. But a plat only ten feet square is required for a family.

Mr. Elliot:—Can get it out by plowing three or four times.

Mr. Scott:—Have yet to see when any one wanted to plow it up. Those in Minnesota who follow Henderson word for word will fail.

Mr. Hart:—Would as soon think of plowing up a row of Duchess trees as my asparagus bed.

Mr. Smith:—I cut as regularly as I would milk, Monday, Wednesday and Friday mornings, and Saturday night. Cut when it is one-half or one inch above the surface. When cut in this way the roots must be set deep, or it may injure the crowns. Deep cultivation and digging, not alone for continuous and heavy yield, but also to enable it to withstand drouth. Asparagus is very sensitive to heat, and in hot weather it grows very rapidly, while a cold day or two will check its growth very materially.

WEDNESDAY EVENING.

Meeting called to order at 7:30.

Horticulture in Meeker County.

The report of G. W. Fuller, on condition and prospects of Horticulture in Meeker county, was read by the Secretary, and ordered by the Society to be published in the Transactions.

CONDITION AND PROSPECTS OF HORTICULTURE IN MEEKER COUNTY.

LITCHFIELD, Jan. 18, 1876.

C. Y. Lacy, Secretary:

DEAR SIR:—Being the only nurseryman on the open prairie west of the "Big Woods," my experience may not be unprofitable to fruit-growers throughout the State.

The Hard Winter.

Four years ago the coming spring, I put in all kinds of apples that were then grown in the State, both root-grafts and orchard trees, such as Duchess, Tetofsky, Haas, Ben Davis, Saxton, St. Lawrence, Tallman Sweet, Price's Sweet, Perry Russet, Fameuse, Red Astrachan, White Astracan, Walbridge, Utter's Red, Pewaukee, Peach Apple, and all kinds of crabs, old and new. The following severe winter (that of '72-3) swept away all my orchard trees except Duchess, Tetofsky and the crabs, and all my nursery trees except the crabs, and the Haas, Ben Davis, Saxton, Price's Sweet, Peach Apple, and a few of my Perry Russets, Red Astrachan and Fameuse, that were somewhat protected.

Notes on Varieties.

The Ben Davis seems to be hardy until it is three or four years old. This is the case also with the Gen. Grant. The Tetofsky lives, but easily root-kills, and does not look healthy or grow. This is the case also with the Saxton and Price's Sweet. I have had Stewart's Sweet in both orchard and nursery for two years, and while they prove thus far perfectly hardy, I question their value, if they do not bear till eleven years old, and are no larger and no better than the crabs. The Wealthy I have had but one year, and it stood well through last winter. The Peach apple seems nearly as hardy as the Duchess. Some Duchess trees in this vicinity are beginning to bear, and are looking fine and healthy. I have now, as the result of my four years' experience, cut down my list of large apples for general planting to Duchess, Wealthy, Peach Apple and Haas; and crabs, to Early Strawberry, Orange, Beech's Sweet, Minnesota and Transcendent. Quaker Beauty, Maiden's Blush and Meader's Winter stand pretty well, but I am afraid of them. I think we should be very cautious in adding to the list of apples to be sold for general planting.

Small Fruits.

The past season was favorable for strawberries, currants and gooseberries, but not favorable for raspberries, either red or black. I grow Doo-little black cap and Philadelphia red.

Blight.

I have had no blight in my nursery nor have I seen any in this part of the State, with a single exception. This was a Transcendent, in Forest City, three years since.

Borer.

The "borer" is doing bad work in some places. Near Kingston some very large trees were entirely ruined by them. Nothing was done to stop their ravages. In fact, I do not think the owner knew what the trouble was. We must fight everything of this kind from the start.

Very respectfully,

G. W. FULLER.

Horticulture in Winona County.

The report of W. K. Bates on Horticulture in Winona county was then read by the Secretary, and ordered by the Society to be published in the Transactions. It was as follows:

REPORT ON CONDITION AND PROSPECTS OF HORTICULTURE IN WINONA CO.

C. Y. Lacy, Secretary State Horticultural Society:

As the programme for the meeting to be held at Winona, January 18th, 1876, came to hand last evening, I will try to dot a few lines on the prospects for fruit for this, our centennial year.

Prospects.

From my own observations and inquiries, I think our county will have a very large crop of apples as well as small fruits. The last season proved to be a very good one for small fruits, but a limited crop of apples. But the raspberry crop was cut short by the dry, warm weather coming on just as the crop was being gathered.

Varieties.

Of raspberries, the Davidson Thornless proved itself to be a number one fruit both in quality, quantity, hardiness and being early—the first berry to get ripe. The standby of course, in strawberries in our county has been the Wilson Albany, but its days for the supremacy are about gone, I think, in Minnesota at least.

Hart's Seedling.

As our good horticultural friend and neighbor, Mr. John Hart, of Stockton, has succeeded in raising a strawberry from the seed that can be justly designated as the coming strawberry.

A strawberry we long have sought,
And mourned because we found it not.

It will be found to be all that is desired and will be a great acquisition to our list of choice fruits. To insure better crops of small fruits I think we must mulch with rotten straw, so that in case we do have dry weather just as the fruit is getting ripe the mulch will keep the ground cool and damp.

Grapes.

The last season was an unfavorable one for the grape, the fruit being tardy in getting ripe. I like the Concord best, with the addition of the Delaware, Janesville and Martha. I tried the Concord, Chasselas and White Delaware, but they both proved tender.

Pears.

Under Thursday's discussions I see that the pear comes in. I have the Flemish Beauty; also two kinds that I got of Mr. H. B. Waterman, of Minnesota City. The two kinds seem to be very hardy, the trees being some six inches in diameter, and some 20 to 25 feet high. They stand in a sort of sandy black loam, or rather creek-wash land—near the creek. The trees came from Michigan, I believe, but cannot say what kinds they are.

Faith in the Future.

I have faith that on some soils, with the land being high, sloping to east or northeast, that we may succeed with the pear. I am a believer, also, that we shall, at no distant day, raise plenty of the apple. As I heard a man say the other day, when he had to pay \$2.00 for a half bushel of apples, as he had the day before, he thought it time to commence to raise his own; and I think as much, when we can raise such as Duchess, Wealthy, Fameuse, Tetofsky, Haas, Price's Sweet, and our larger list of Transcendents, Oranges, General Grants, Hyslops, and others too numerous to mention, as we have in the past and can in the future. What if we'd lose some trees in '72 and '73? did we not lose the corn crop in '74? and who of us will say "I shall stop planting corn," because the season failed to ripen the crop? But if the seasons kill the apple tree, the key note is then that Minnesota is not the place for fruit growing; while at the same time, if any of the other crops are hurt, it is soon forgotten. I, for one, shall still *keep planting*, and in time shall reap the reward.

Yours,

W. K. BATES.

ANNUAL ADDRESS.

President Smith then read his annual address, at the conclusion of which there was applause.

The address was accepted and a copy requested for publication.

The following is the address in full:

PRESIDENT'S ADDRESS.

Gentlemen of the Minnesota State Horticultural Society:

Our Purposes.

We have met again to compare notes and consult each other on our experience and experiments of the past year with its successes and

failures, its fruits and flowers. Now the question naturally arises, what have we new to offer, and what have we learned in the past year that will add to our horticultural knowledge, and be of lasting benefit to ourselves as individuals, and to our Society, or the future welfare of Minnesota. This is the great question of to-day and for this meeting to discuss, and if possible, after a full comparing of notes and experiences with the different fruits, flowers and vegetables, and different soils and modes of cultivation to answer by selecting the best, so that all may gain some knowledge or get some hints that may be of use to ourselves as well as others in the future. It is for this purpose that we meet here to-day, and it is for this purpose that the Legislature of the State of Minnesota have published two thousand copies of our Transactions from year to year, so that our experience, our success and our failures, and our experiments may be made known to the public and not forgotten by ourselves. Consequently you do not come here to listen to lengthy addresses or flowery speeches. If you have any such expectation you will be sadly disappointed if you expect anything of the kind from me. I do not propose to take up your valuable time in that way, but to throw out a few hints in regard to our Society and our calling, both of which I hold to be not only of great importance to ourselves, but also to our State, and to those who shall occupy our places long after we are called to other, and may I not hope, better spheres, by the Great Author of our being and

Our Calling,

for, as I have before remarked to you in a former address, the Almighty planted the first garden, and planted man therein to tend and take care of it; so that we can see ours is not only the most ancient, but the most exalted and honorable of all occupations man can perform. God not only planted the first garden, but has by His sunshine and showers warmed and watered all that have ever since been planted. Now when we give this a serious thought, and that God is on our side, who shall prevail against us? And when we take into consideration that fruit is the only food that is prepared by nature ready to be consumed by the human family, who can doubt but that horticulture is not only the first but best employment of men. And is it not a duty as well as a pleasure to do all in our power, both as individuals and as a Society, to improve and advance horticulture in all its branches?

That advanced horticulture tends to elevate and enlighten, and

bring to a higher state of civilization, to give more and purer enjoyments than any other science or occupation, none can deny, that have sought its enjoyments or witnessed its effects upon others.

Flowers.

Flowers are admired and sought by all, from the cradle to the grave. There is a demand for them everywhere, in all enlightened nations. The higher and better the standing of the city or nation, the greater the demand for flowers and other horticultural products.

Even in drinking saloons they are used to attract the passer by, and to in some manner add or lend a respectability to their calling. The wild and untutored savage will stop to look and admire them. They adorn the wedding feasts. They are occupants of the sick room and hospital. They grace the pulpit and parlor alike, and go with us to the house of mourning, to render our sorrows less keen. They are everywhere present and everywhere welcome, where the skill of the florist or the possibilities of nature will permit their growth; and who can say that we are not the better and more elevated for them, in every sense of the word; that life is not purer, our joys more, and our sorrows less, for having an abundance of flowers. Then let us add to and encourage their culture by every honorable means within our power, until each and every home and school-house in our land shall have its shade trees and flower garden, and until our cemeteries shall each and all be furnished or planted not only with shade and ornamental trees and shrubs, but also with an abundance of the choicest flowers our soil and climate can produce.

Fruits and Vegetables.

Now, what has been said of flowers, is equally true of fruits and vegetables. But they appeal to us in a different form. They appeal to our palates, our health, and last, but not least, our wealth. Our fruits, even at the present time, amount to quite a sum in dollars and cents, not only to those who grow them, but in saving and keeping money in our State, whereby all are benefited. And when this Society, or some other or individual members thereof shall have solved the great problem of what kinds of fruits will withstand the severity of our cold, dry climate, and what is best adapted to our soils, and what is the best method of cultivation, horticulture will not then stand in the background, and horticul-

tural products will form no small share of our commerce and our food.

Be Cautious.

Now, to aid in bringing about this good time is what we are here for, and in order that we may accomplish this in the shortest possible time let us go slow. Be careful what we recommend for general cultivation until well tried in different soils and locations, believing that such a course will tend not only to advance horticulture and fruit-growing, but give the public confidence and show them that we at least have no axes to grind and no rings to support.

Agricultural Society.

To the officers and members of our State Agricultural Society let us one and all return our thanks for the very satisfactory and liberal manner in which, under their many difficulties and extreme bad weather, during not only the week of State Fair, but the whole fall of 1875, that tended to make the State Fair a failure, paid not only our premiums, and fulfilled their obligations not only to this Society and its members, but to all others. It is true that they were not able to pay the old premiums of 1874; but as I said last year, let us take hold with a will and do our level best to make the State Fair of 1876 a great success in every way that we, as horticulturists, can add to the attractions, and to furnish the very best display of fruits and flowers, and other products, ever made in the State of Minnesota, and thus enable them to pay all premiums and expenses, and to pay our old premiums; for I believe all that stands in the way of our getting our premiums, as the State Agricultural Society is now organized and officered, is their ability to do so. I do not think they will keep us out of our money long after one successful State Fair. Give them all the support we can, and good weather during one State Fair, or two at most, and they will not only have the means, but disposition, to pay all to the last cent, and will most cheerfully do so.

Obituary.

And here let me remark, our late Secretary, L. M. Ford, Esq., last winter was appointed to prepare obituaries of deceased persons, and in our Transactions has published three of men that I think never were members of our Society, and to which I have no

objection ; but that he should fail to notice the death of Capt. Wm. Paist, late Secretary of the State Agricultural Society and State Grange, and one of the members and incorporators, and warmest friends of this Horticultural Society, and one by whose aid and labors the State Agricultural Society first recognized this Society and its members, and was willing to give us a place and voice in its deliberations, and anything like a share in its premiums, should have been passed by in silence, looks strange to me, and I think demands attention at your hands.

1875.

The year 1875 was not a bountiful one to the horticulturists of Minnesota. Generally the fore part of the season was dry, especially during the fruiting season of raspberries, and the latter part, during the ripening of grapes, cold and wet. So they did not ripen well. In stating my own experience and conclusions, perhaps it may induce others to do the same, and thereby compare and learn something for the future. First, asparagus was a good or extra crop, best I ever raised ; but prices so low it did not pay. Straw berries, only small quantity cultivated, medium crop. Raspberries not over 1-10 of crop ; cause of failure, I think, manner of hoeing and want of mulching, together with drought at time of fruiting. Grapes, well loaded, but did not ripen well ; still I had a fair crop, over six thousand pounds ripe grapes. But last year's experience teaches me that to grow grapes and have them ripen in this northern climate every year, we cannot cultivate too well, and keep too free from weeds. I believe had I put double the amount of labor upon my grapes, judiciously expended, in the early part of the season, I would have made more than double the money. And here let me remark, do not fruit growers, especially growers of small fruits, cultivate too much land for the labor they have to bestow ? Would not better cultivation be more profitable ?

State University.

Our State University is now doing something to aid and assist us, and can we not soon look to them for assistance in this vexed question of entomology as well as pomology, botany and other sciences that will aid horticulture. Whoever visited that institution five or six years ago and last season will see a marked improvement in the right direction, and cannot this Society make arrangements to hold our annual summer meeting at the University, and thereby gain a

constant knowledge of what is going on and what improvements are being made, and by our presence show them that we take an interest in their success, and also show them by our displays what we are doing as individuals and as a Society.

Progress.

Can any one look back 25 years and see the prospects of fruit culture as I then saw them in Minnesota, and look at the crops of small and large fruits and vegetables of 1870 to 1875, and say that even in Minnesota we have made no progress? I think not, and have we not something to encourage us to move on and make an extra effort to make more improvement in the next 25 years than we did in the last, and shall we not, as a Society, make an effort through our able and efficient Secretary, together with our incoming President, to make a display of our horticultural products next September at the reunion of the American Pomological Society in Philadelphia, that will be a credit to our State, our Society and to ourselves individually. In conclusion, let me return my heartfelt thanks for the kindness and courtesy you have shown me as well as honors conferred by three times electing me your President, and hoping you will forgive and forget my short comings, and believe me as ever devoted to Minnesota horticulture and the interest and advancement of the Minnesota State Horticultural Society. While I surrender my office to other and abler hands soon to occupy it, I remain as firmly devoted to the interest of the Society as ever, and that I may still be of some advantage and in some manner help the cause, will ever be my prayer while life shall last.

DISCUSSION.

Mr. Harris:—On behalf of the State Agricultural Society, I tender thanks for the encouragement and assistance received from the Horticultural Society the past year. But for it we should not have been able to meet our difficulties and to succeed as well as we did.

Summer Meeting.

Am in favor of the State University for holding a summer meeting. There is a place to keep and to show fruits and other products. The State has made great progress in horticulture. There were

only twelve men at the first meeting. We shall yet command the respect of the Union.

In Memoriam.

Mr. Elliot offered the following resolution :

WHEREAS, Our Secretary for 1874, from oversight or neglect, did not furnish in our last year's Transactions, an obituary notice of our late worthy brother horticulturist, Capt. Wm. Paist; therefore

Resolved, That an obituary notice be prepared for publication in our Transactions for the coming year by J. W. McClung, of St. Paul, and that Mrs. William Paist is hereby elected a life member of this Society, entitled to all the rights and privileges pertaining thereto, including a copy of the Transactions annually.

The resolution was adopted.

Floriculture.

The Secretary attempted to read a report on Floriculture, by Mr. J. E. Booth, of Minneapolis, but owing to the difficulty of reading some of the specific terms, he asked and was granted leave to finish the paper at another time. The following is the report in full :

FLORICULTURE.

MR. PRESIDENT :—The love of flowers is almost universal; but, though it is so general, I find that very few people have the patience to try to cultivate them, and, of those who make the attempt, there are very few who succeed. Most, after repeated trials, and as many failures, give up in despair. Some few, indeed, of the unsuccessful ones, are content to go on year after year, making repeated failures, and yet persevering in spite of all. But those who succeed, and those who persevere despite their non-success, are very few as compared with the larger number, who, having met with nothing but disappointment, become discouraged, and give up the attempt in disgust; being content, either to do without flowers altogether, or to buy them, if wanted for any particular occasion. I might say a great deal in praise of the cultivation of flowers, and its refining influence; showing how it adds to the beauty and pleasures of home, improving the mind and expanding the ideas of the cultivator; but I take it *we* are all agreed on that point, so I will not say much about this. My object is to point out some of the causes of failure, and to show how it may be best avoided, confining my remarks almost entirely to that department of floriculture which comes under the head of window-gardening—I will merely observe, that plants and flowers are the cheapest ornaments and decorations we can have in our homes. Whether they be the shanty of the poor, the mansion of the rich,

or the dwellings of that numerous class between those two extremes—they never clash with the richest surroundings, or look out of place amidst the most elegant and costly appointments. On the other hand, they give an air of elegance and refinement to the poorest abode, without making the furniture look shabby by contrast, even though it be of the roughest and scantiest description. Of one thing we may be assured, that where we find flowers in any abode, whether of rich or poor, there we shall find cleanliness, and a natural refinement which prompts to the making of home comfortable and attractive. Perhaps it would be in vain to look for plants in the homes of our laboring classes during the winter; and, indeed, it would not be fair to expect it, on account of the impossibility of excluding the frost, without keeping up a fire at night—an expense which their means will not warrant them in incurring. But there are numbers more fortunately circumstanced, who, having houses thoroughly warmed both day and night, would run no risk of having their plants frozen.

Window-Gardening.

Window gardening is especially and emphatically the province of the ladies, and is one of their rights which none will dispute, or attempt to debar them from exercising. What a relaxation they would find it, to turn from the worries and cares of their household duties—from the "*res augusta domi*"—to their plants; and I may say that the satisfaction to be derived from their cultivation, would be in proportion to the judicious care and attention bestowed upon them. Though it not infrequently happens that, in spite of all the care and attention lavished upon them, the plants, after doing well for a time, go back on their cultivation, and die. But with proper care and judicious attention, barring accidents, success is nearly certain; and my object is to show some of the causes of these disappointments, and point out how they may be avoided. In the cultivation of pot plants several points should be observed. First in importance comes *watering*, on the proper performance of which, perhaps, more than on anything else, the health and prosperity of the plants depends, and from want of a proper appreciation of which fact arise most of the failures which amateurs incur. In the great majority of cases where plants are not healthy and thriving, the cause lies here: either they over-water, or they do not water sufficiently. Many people keep their plants standing in saucers full of water, by which means the soil gets completely saturated, and turns sour; the plant consequently becomes unhealthy, and loses its leaves. Soon the plant dies, much to the surprise of the owner, who cannot think what could have ailed it, little imagining that it was her mistaken kindness that did the mischief. Pots often dry out on the surface, while the soil is sufficiently moist below, and to water while in this condition only does harm. This surface drying often happens in warm rooms. The best way to ascertain when a plant requires water is to rap the pot with the knuckles. If it gives a hollow sound, water is required; but if the sound be dull, the plant is wet enough. In some instances, as when pots have become very full of roots, they will not sound, when struck, even though the soil be dry. When this is suspected, lift the pot with the hand, and judge from the weight. On the other hand, plants

often suffer from being kept too dry, either from not being watered often enough, or not getting sufficient water to reach all the roots. When such cases occur, the only plan to save the plants is to immerse the pots in a pail of water, and keep them there till the bubbling ceases. This will insure that the water reaches all the roots. They should then be taken out, and afterwards watered in the usual way, as required. The soil in the pots of plants exposed to the full blaze of the sun often get thoroughly dry and hot, and when this occurs, the plants should be plunged in water till the soil is thoroughly saturated. It is useless to water them in the usual way, as the water only runs down the sides of the pots, without getting to the roots, and the soil in a short time becomes as dry as before. Again I say, be careful with the watering.

Soils and Potting.

The health of plants also depends a good deal on the quality of the soil, on the drainage, and on the size of the pots used. If the pot be too large the soil is liable to sour before the roots reach the pot sides, and the plant suffers in consequence. In shifting plants they should be put in pots one size larger. Soft-wooded plants require re-potting oftener than hard-wooded plants, as their root-growth is more rapid. For drainage of such plants a piece of a broken pot over the hole in the pot bottom will be sufficient. For a larger plant more drainage is required. In potting plants the pots should not be filled within half an inch of the top for small pots, or an inch for large ones, so as to have plenty of room for water. Some people fill up to the rim, but when this is done the water runs over the sides of the pot instead of getting to the roots. All newly-potted plants should be kept from the wind and sun till the roots get hold of the soil. About the best compost for soft-wooded plants consists of three parts of good loam, a little well rotted manure and some leaf mould, with a little sand, well mixed together. For hard-wooded plants a mixture of good loam and peat. Plants should be shaded from the sun on hot days, and frequently syringed to clean their leaves from dust, but this must not be done when the sun shines on them. I will now give a list of plants most suitable for pot culture. For summer I would recommend geraniums, Zonale, Bicolor, Tricolor, Bronze; and the various sorts of scented geraniums, such as Rose, Nutmeg, Lemon, Cinnamon, Apple, &c. Fuchsias—*Light, single*, Madame Correllison, White Lady Schiller (the best,) *Diadem*; *Dark Single*, Elm City; Pure White Double Arabella.

These I consider the best. There are many newer ones, but they have not been sufficiently long before the public to warrant me in recommending them: Lillies, Alba, Lancifolium, Rubrum; lobellias; mignonette, planted in boxes and thinned out; Tradescantia; myrtles, English ivy, German ivy, smilax; Lycopodiums. For winter and spring the same except fuchsias.

Bulbs.

For winter and spring the various kinds of bulbs, as hyacinths, tulips, crocuses, &c., may be grown to advantage and make a fine show. Hy-

cinths I would especially recommend, for the ease with which they may be grown and for the beauty and fragrance of the flowers. They may be raised either in pots or glasses. For glasses the single varieties are the best. Colored glasses are preferable, as the roots do not like a strong light. Fill the glasses with clean rain water so that the base of the bulb but just touches the water. A few pieces of charcoal in each glass will keep the water pure. The glasses should be put in a dark frost-proof place, such as a cellar, till they are nearly filled with roots before the bulbs make any top growth. On this point the production of fine flower-spikes depends. The glasses may then be removed to the living room, keeping them near the light, but avoiding strong sunshine and a dry scorching atmosphere. As the water in the glasses evaporates, they should be filled up with water of the same temperature as the room. Hyacinths may also be grown in pots. For this purpose a rich light soil is necessary. A good compost may be made of two parts sandy loam to one part well rotted manure and sand. In planting, the soil should be pressed firmly in the pot, leaving the crown of the bulb uncovered. A single bulb may be planted in a four-inch pot, or three bulbs in a six-inch pot give a fine effect. After planting, the pots should be watered and then set away in a cool, dry place and covered with sand, ashes, or sawdust, about six to eight inches deep, till the pots get filled with roots. They may then be brought out to the light, but if the flower buds are forward and of a pale color they should be shaded till they assume their natural color, when the full light may be admitted; but here, as with glasses, strong sunshine and dry, hot air must be avoided. They will require a good deal of water. The bulbs should be planted from September to the last of November or beginning of December for a succession. Tulips may also be grown in pots, treating them in the same manner as hyacinths. I believe these are all the essentials of successful window-gardening.

J. E. BOOTH,
Minneapolis Greenhouse,
Minneapolis, Minnesota.

Raspberries.

Mr. Grimes then read his paper on the propagation, cultivation and varieties of the raspberry. It commanded general and close attention, and at the close was ordered published in the Transactions. It is as follows:

PROPAGATION, CULTIVATION AND VARIETIES OF THE RASPBERRY.

Mr. President and Gentlemen of the State Horticultural Society:

It cannot be denied that our climate is a rigid one, especially for the fruit grower, who must be possessed of a degree of intelligence and perseverance not absolutely necessary in a more congenial clime.

With us, success is the exception, and it is only by repeated experiments and trials. We wait and watch, standing, as it were, on the balance

between hope and despair, while some favorite pet of ours is undergoing the ordeal that must determine its value or worthlessness. No wonder some have gone back, after repeated failures, and left the field and the reward for them that know not what failure is. By such, progress has been made, horticultural science advanced; old varieties of fruits have been tested and brought out, new varieties introduced and disseminated, suited to the soil and climate of Minnesota.

In the list of fruits none stand higher, with us, than that class generally denominated small fruits, of which the grape, currant, gooseberry, raspberry, and strawberry are the most prominent. Of these none perhaps are more certain, or yield a better return for the labor required in their cultivation, than the raspberry, the subject assigned me for my present essay. First—

Varieties.

The foreign Red Raspberry (*Rubus Idaeus*) has been long tried in the Eastern States, but it has been found that there are few localities where its cultivation has been attended with good results. The Red Antwerp is a type of this class, and if the fruit could be grown here with any degree of certainty, it possesses all the good qualities which one would expect to find in the raspberry.

Our native Reds (*Rubus strigosus*) are more hardy, some varieties entirely so, but like their foreign cousins, throw up such an abundance of suckers, that where once introduced, seem determined to remain, whether you want them or not. The Turner and Clark are perhaps the best of this class.

There is also a sub or hybrid class, derived from crossing the foreign with our native red, but I have failed to notice any marked improvement in them.

We proceed to notice the black cap family (*Rubus occidentalis*) an entirely different class from the others, producing no suckers, but propagating only from the tips. Now it is well known that this species is not only hardy and prolific, but produces abundantly without extra care in cultivation, and will succeed in a greater variety of soils, and over a wider range of country than any other. It is, in all respects, says a horticultural friend, a first rate berry, except in one, it isn't good to eat. It is, however, an excellent berry to raise, and it is good to give away, at a reasonable price. It stands pre-eminent in the same relation as the Wilson among strawberries, or the Concord among grapes.

There are some thirty or more varieties of the black raspberries in cultivation, but the difference between most of them is very slight indeed, so much so, that when you select some half dozen, you have all the qualities included in the whole list.

The Doolittle is the one best known, and has been the market raspberry for more than ten years. It is an early variety, carries well, and is in all respects one of the most profitable.

Davison's Thornless will ripen a few berries a little earlier, but is not so productive as the Doolittle; its chief recommendation, "it don't scratch."

The Seneca is from a week to ten days later than the Doolittle, equally

productive, is less seedy, more juicy, better in quality, and carries well to market. In fact, it is one of the very best of the black caps.

The Miami, or Mammoth Cluster, as it has been rechristened, is the latest, as well as the largest of all the cap varieties, but the fruit is coarse, dry, sour, and seedy; even the birds do not seem to relish them, after eating better sorts. They are only palatable when well sugared up. The canes grow very stout, and generally winter-kill to the snow line in this latitude.

The Garden raspberry is a variation from the blacks, in that the fruit is purple, with more of the flavor of the reds. It is a valuable berry for family use, but too soft to carry well to market. The canes are perfectly hardy.

There are also yellow caps, but the fruit is inferior to the black, and can be recommended only for variety.

There are also new red fruited sorts of this class being brought into notice, and I think we may soon look for a berry combining all the good qualities of the red, with the habit of growth and hardness of the black.

Perhaps it would be proper in this connection to notice certain varieties called ever-bearing, which are said to produce a full crop early in the season, and afterwards upon the tips of the new growth of wood to produce fruit ripening at intervals until the close. In this we have too much of a good thing. I have sometimes during the fall season found ripe fruit enough for a taste, but nothing for the market or the table.

Varieties to Plant and time of Planting.

One of the most puzzling things to a beginner is to make a good selection of varieties, and the more he consults standard authorities, the worse is the confusion, and even when his inquiries are directed to some nurseryman or fruitgrower, the chances are that some special pet of his, of which the inquirer has never heard, comes recommended as being superior to every thing of the kind, and the wonder and admiration of all who have seen it. Of course it is held at a high price, but who cares for that, when we are getting something better than can be found in our neighbor's grounds, and likely to supercede everything of the kind?

While I would not discourage the planting of new varieties for experiment, I say touch lightly until they have been more fully tried. Better follow in the old channel, if you can realize from \$200 to \$500 per acre for your crop, than risk your chances on something new, even though it promises double that return.

The black caps thrive well everywhere, and in their wonderful natural habit of adaptation to all soils and climates, they are a perfect blessing to both grower and consumer. The Doolittle and Seneca will be quite sufficient for those beginners, who cannot afford the high prices for new and untried sorts. Of the red raspberries, public opinion seems to point out the Philadelphia as the surest to grow.

The raspberry may be planted out with good success, either in the fall or spring, but I prefer the latter, as the ground is always moist at the time, and if the plants have been handled with care, so as not to expose the fibrous roots to the drying winds, are very sure to grow. I have planted

at various times, from the middle of April to the middle of June, when the plants had made growth of a foot or more, with equal success; indeed, I prefer to have them well started if they can be removed in a moist time, with some dirt attached to the roots.

Soil and Location.

The raspberry cannot be grown successfully in any place under the sun, without a good, rich, moist soil, such as you would select to grow a premium crop of corn or potatoes, and if those requisites are wanting they can only be remedied by abundant manuring, frequent cultivation, and deepening of the soil. Moisture is a partial fertilizer, but low moist grounds are to be avoided, as producing too much wood of a weak succulent growth, which is sure to winter kill.

The best location that can be found for a raspberry plantation is high, level lands, sheltered well from the cold, sweeping winter winds. Many trees and plants exposed to the full sweep of the winds and sunshine of winter, perish, that otherwise would have been perfectly hardy. The next best location and one that will ripen the fruit a little earlier is an eastern or southern slope, and if there should be a lack of moisture in the soil it may be remedied by mulching.

Cultivation and Protection.

Good cultivation consists in keeping the soil mellow and free from weeds; and no crop will give better returns for a little extra labor and care. The plow should be started early in the season, followed by the cultivator at frequent intervals, until the fruit is about half grown, when mulching may take its place. Perhaps no part of the culture of this fruit is so important, and has so great an influence on the success of the crop, as a careful mulching. It should be applied invariably during the fruiting season. It can afterwards be removed, the ground carefully cultivated, and then replaced for fall or winter protection.

Pruning may be considered a part of the cultivation necessary in the management of a black cap plantation. The young canes should be shortened in just previous to the ripening of the fruit; this removes them out of the way of the pickers, and checks their rambling growth by causing the plant to branch out and grow more stocky, thus making it stronger to sustain itself and its load of fruit. It also stands the winter better, being nearer the ground.

After the fruiting season is over, the old canes should be removed, as they are then entirely worthless, and tend to check the growth of the new. If the work has all been properly done the rows of plants at the end of the growing season will present a broad top bending over toward the ground; and now a little dry straw placed on top of the rows, just enough to shade the plants from the sun, will bring them through the winter all safe.

Marketing, &c.

I am not going to load down your ships for the market, nor guarantee a

\$1,000 an acre for the crop, as some fruit growers have claimed, and perhaps have succeeded in some instances to obtain; but if you are near a good market, and attend to the handling and marketing of the fruit yourself, there is no crop that will pay better. The fruit should be picked as it ripens, for if left on the vines too long it becomes too soft to handle. The better way is to divide the plat in two equal parts, (as the fruit ripens in succession) and go over one part each day, picking all the ripe berries clean as you go. Never use buckets or tubs for gathering or carrying, unless you intend the fruit for jam.

For marketing, pint baskets are preferable to quarts, and a flaring basket is better than a straight or upright one, as the weight of the fruit rests more against the sides, and presses less at the bottom. The baskets should be well filled, and the fruit placed upon the market in the best possible condition, as ultimate success depends very much on our reputation for honesty and fair dealing. If near enough to a large city, and you have no more fruit than you can handle, it would be better to select your customers and supply them from day to day, saving the commission of middle men, who frequently absorb all the profits. In engaging in a business of this kind certain conditions are necessary: First, a good market; second, one that is easy of access; and third, quick and cheap transportation, without which no certain calculations could be made, as the business may be overdone, and we should not be able to compete with those having advantages over us.

But there is a market that I have never seen glutted, and the prices are always remunerative; I mean the *home* market. How many of you farmers and mechanics have even a scant supply of those health-giving fruits? and yet how easy it would be for every one owning a few rods of ground, to cultivate enough for family use, not only while fresh, but to can, and preserve, and dry to supply the table the whole year round.

Twenty years ago I came to Minnesota in poor health,—my family's health was poor, but we are all living, and now we have eight children, and since we have had plenty of fruit to supply the table, no physician has entered our door (professionally) in the past eight or nine years; not since our last baby was born.

The Birds.

And now one plea for the birds and I am done. Some persons say that they would plant out more of those small fruits, but the birds always get the largest share. True, if you plant no more than the birds ought to have, for they are co-laborers with yourself, protecting and saving the fruit from devouring insects, while you only do your part in cultivating the crop. Are they not worthy of their hire?

Long before you have left your dreamy couch, they have sung their morning hymn, and gone forth like angels of mercy upon their errand to save, and with microscopic eyes search out and destroy those small insects that are just ready to devour the crop. But man comes sneaking out, creeping, and crawling, and crouching beneath the hedge with murderous gun in hand, brings down the fluttering birds, bleeding and dying, at his feet. What wonder if the earth is cursed for man's sake?

I never miss what fruit the birds take from my grounds, and they are welcome, thrice welcome to the little pittance they claim, and have so nobly earned. I believe the same birds come back to me every year, and seem glad to find the place, for scarce have the snows of winter gone before I hear the familiar greeting song, and then with cheerful hop from branch to branch, and tree to tree, down in the furrows, along the fence, and through the grounds, gathering up the seeds of noxious weeds, and swarms of insects yet in embryo, they still pursue, and watch and work, as with a will, the summer through, asking nothing in return except a little fruit for dessert; just that and nothing more: God clothes them.

J. T. GRIMES.

DISCUSSION.

Mr. Harris:—Feel modest about speaking on this subject. Good fruit is easy to raise, but farmers hardly know how it tastes. If they did they would raise more of it. The Doolittle is the most commonly cultivated, and the black caps are the most profitable. We fruit growers do not wish to monopolize the cultivation of fruits. We want the farmers to grow fruit and the nurserymen will sell them the plants. The Seneca will yet take the place of the Doolittle. Davison's Thornless is hardier than the Doolittle and would cultivate a few for early. Red berries, however, sell better than black in the market.

Mr. Pearce:—I consider the raspberry the most important fruit crop of the State. I cultivate only for family use. (The speaker here described his fruit farm of about half an acre.) I manure with soap factory sediment and this makes them produce wonderfully. Some pines on one side cause the snow to lodge and cover up the vines. Mr. Cook cultivates two rows of corn and two rows of raspberries alternately throughout the field; the cornstocks hold the snow which protects the vines.

Yields.

Mr. Smith:—The best yield I have heard of is that of Mr. Boxell, whose Philadelphia yielded at the rate of 2,800 quarts per acre, and the Kirtland at the rate of 1,600 quarts per acre. He sold at wholesale at an average of about 25 cents per quart. He intends putting out ten acres of raspberries. He grows the Philadelphia, Seneca, Doolittle, Kirtland, and Turner. He is a grower also of onions; sometimes raises 3,000 bushels, but generally about 1,500 bushels.

Mr. Bunnell:—The farmers at large are becoming more interested in setting raspberries. They should be well cultivated in garden

soil and thoroughly mulched in summer. For varieties would plant Davison's Thornless, Doolittle, and Philadelphia.

(Mr. Brand made some remarks which were lost by the Secretary.)

Training.

Mr. Jordan :—Have now about ten acres of raspberries, largely of the Red, Purple Cane or garden variety. Davison's Thornless is not a favorite with me. Have two acres of Philadelphia which have produced half a crop for the last two years. As to training I find a difficulty. If I cut back the branches, the wind blows them about and breaks them, and if I let them grow they trail on the ground.

(Inquiries were made about the Ontario. Some had it but had not fruited it. The Herstine was also inquired about.)

Mr. Sias :—Hoag's seedling is the best I ever tested.

Mr. Hart :—As for the Herstine, have seen them and called them the best I ever tasted. Know of a man who has half an acre of them.

Mr. Tuttle was called for, and finally rose. He remarked in substance as follows :

I see quite a change since I last visited your Society. Then you were recommending fruits found difficult to grow in Wisconsin. Now I perceive more caution. Success will first be reached with hybrids, and finally we will grow the apple in Minnesota and Wisconsin to supply our home demand. The territory of Russia is similar in climate and soil to ours, and as they grow fruit there, so we can here. I have faith in Russia as a source of varieties, and think attention should be turned in that direction.

Blackberries.

Mr. Smith :—(In answer to question.) I have tested nearly everything of promise in the blackberry line, and everything has been a failure. But the trouble is, my soil is too rich to grow blackberries.

Secretary's Report.

The annual report of the Secretary, Chas. Y. Lacy, was then called for and made, and was ordered to be published in the Transactions. It was as follows :

REPORT OF THE SECRETARY.

GENTLEMEN:—I find neither in constitution nor by-laws anything that requires me to report anything more than matters of business interest. Custom may perhaps demand something more—some display of eloquence. Gladly would I conform to both law and custom, but pressing duties have not left me the time to prepare a written report of the most ordinary things. I therefore beg your indulgence while I make a verbal report of such matters as may be of interest and not already generally known.

A meeting of the Executive Committee was held March 24th, 1875, when it was decided to hold a summer meeting of one day's duration at the State University. It was also decided to offer special apple premiums in the premium list of the State Agricultural Society for 1875, as follows:

Special Apple Premiums.

The Executive Committee of the Minnesota State Horticultural Society pledge said Society to the payment of the following premiums when awarded:

For the best seedling Winter Apple raised in Minnesota.....	\$100 00
For the second best.....	50 00
For the best seedling Autumn Apple raised in Minnesota....	80 00
For the second best.....	20 00

Entries for these premiums, naming and describing tree and fruit, to be made by the originators only, on or before January 1st, 1876.

No premium to be awarded until the Autumn Apple shall have been exhibited at the State Fairs, and the Winter Apple at both the State Fairs and Winter Meetings of the State Horticultural Society, for five years; nor until the tree shall have been in bearing in each Congressional district of the State of Minnesota for five years; nor unless the tree shall be as hardy as the Duchess of Oldenburg, and the fruit of good quality.

Entries for special apple premiums must be filed with the Secretary of the State Horticultural Society.

Summer Meeting.

The summer meeting was held June 30th, and though the attendance was small, the meeting was highly interesting and successful. Among other features of interest was a visit to the University Farm, a report of which you have already heard. There was also a very fair display of plants, fruits, flowers and vegetables. It is hoped that these summer meetings will grow in interest and the exhibitions in size with each succeeding year. At this meeting the action of the Executive Committee on special apple premiums was approved, and other business transacted as follows:

A committee consisting of J. S. Harris, D. A. J. Baker, Col. J. H. Stevens and Wm. Fowler, was appointed to report at this meeting on the condition of the University Farm.

A permanent committee on obituaries, consisting of Messrs. Stevens, Loring and Nutting, was appointed.

Messrs. Smith, Harris, Elliot, Jewell and Lacy, were appointed delegates to the meeting of the American Pomological Society.

Col. Stevens, Gen. Nutting, Pres. Smith, of the Horticultural Society, and Pres. Fowler, of the Agricultural Society, were appointed a committee to apply for a room at the State Capital, for the use of the Agricultural and Horticultural Societies, and to be open at all times.

Another meeting of the Executive Committee was held January 6th, when the programme for this meeting was adopted, and 800 copies ordered to be printed and distributed.

Library.

The following books have come into my possession. They are now placed, and will hereafter remain, subject to the order of the Society:

- Transactions Illinois Horticultural Society, vol. 2, 1868.
- Transactions Illinois Horticultural Society, vol. 3, 1869.
- Transactions Illinois Horticultural Society, vol. 4, 1870.
- Transactions Illinois Horticultural Society, vol. 5, 1871.
- Transactions Illinois Horticultural Society, vol. 6, 1872.
- Transactions Illinois Horticultural Society, vol. 7, 1873.
- Transactions Illinois Horticultural Society, vol. 8, 1874.
- Entomology of Missouri, 6th report, 1878.
- Transactions Wisconsin State Horticultural Society, 1872.
- Transactions Wisconsin State Horticultural Society, 1875.
- Pomology of Maine, 1873-4.
- Proceedings Nebraska State Horticultural Society, 1872.
- Transactions Nebraska Horticultural Society, 1871; paper.
- An Address before the Nebraska State Horticultural Society, by James T. Allan; paper.
- Address of Dr. H. Latham, at State Fair of Nebraska, 1872; paper.
- A Speech at Neb. State Fair, 1878, by J. Sterling Morton; paper.
- An Address, The Foes of the Farmers, at Neb. State Fair, 1874, by A. L. Perry; paper.
- New Constitution of Nebraska of 1875; paper.
- Prize Essay on Forest Growing, by J. T. Allan; paper.
- An Address, Farmers' Wives and Daughters, at Neb. State Fair, 1878, by Matilda Fletcher; paper.
- Fruit List for Province of Quebec; paper.
- Address at 15th Session Am. Pomological Soc., 1875, by M. P. Wilder; paper.
- Proceedings First Annual Meeting Minn. Hort. Soc., 1869; paper.
- Rep. Minn. State Hort. Soc., 1866-78.
- Transactions Minn. State Hort. Soc., by John S. Harris; paper.
- Trans. Minn. State Hort. Soc., by L. M. Ford; paper.
- Thirteen volumes in cloth.
- Thirteen volumes in paper.

Expenses.

The expenditures of the Secretary for the past year have been as follows :

For envelopes	\$1 75
" 25 St. Paul Presses sent to various Agricultural Papers.....	65
" 25 one cent stamps.....	25
" Postage on 5 copies Transactions	30
" Postage on 12 notices.....	36
" Four hours writing notices.....	80
" Postage on 17 letters.....	51
" Postage on 2 Reports.....	17
" Printed Programmes and Envelopes.	6 50
" Postage on same.....	1 60
" Printing R. R. Certificates.....	1 75
	<hr/>
	\$14 64

Respectfully submitted,

CHAS. Y. LACY,
Secretary.

Treasurer's Report.

The annual report of the Treasurer was then read, accepted, and ordered to be published in the Transactions.

Treasurer Minnesota State Horticultural Society :

1875.	Dr.	Cr.
Jan. 21st, To balance on hand.....	\$7 33	
Jan. 21st, To membership dues.....	24 00	
	<hr/>	
	31 33	
Jan. 21st, By cash paid out on order of Pres. and Sec'y...		\$23 97
1876.		
Jan. 19th, By balance.....		7 36
		<hr/>
		31 33

The Society then adjourned to 9 o'clock to-morrow morning.

THURSDAY MORNING.

Meeting called to order by the President at 9 : 25.

The election of officers for 1876 was the first business taken up.

The election was by ballot, without nominations, and the following are the results :

For President.

First ballot—

Dartt, 5; Harris, 1; Loring, 2; Smith, 9; Jewell, 8; Elliot, 2. Whole number, 28.

Second ballot—

Dartt, 5; Loring, 1; Smith, 14; Jewell, 8. Whole number, 28.

On motion of Mr. Grimes, Truman M. Smith was declared unanimously elected.

For Vice President from First Congressional District.

Dartt, 12; Harris, 8; Buck, 8; Jewell, 2. Whole number, 20.

E. H. S. Dartt was declared elected.

For Vice President from Second District.

Carter, 19; Blank, 1. Whole number, 20.

T. G. Carter was declared elected.

For Vice President from Third District.

Elliot, 11; Grimes, 6; Loring, 4; Blank, 1. Whole number, 22.

Mr. Elliot declined, and, on motion of Mr. Brand, the rules were suspended and the Secretary directed to cast the vote of the Society for Mr. Grimes; which was done, and J. T. Grimes was declared elected.

For Secretary.

Lacy, 20; Harris, 2; Brand, 1. Whole number, 23.

Chas. Y. Lacy was declared elected.

For Treasurer.

First ballot—

Elliot, 4; Sias, 9; Stewart, 9; Brand, 1; Harris, 1; Rollins, 1. Whole number, 25.

Second ballot—

Elliot, 2; Stewart, 8; Sias, 13; Rollins, 1. Whole number, 24.

A. W. Sias was declared elected.

Executive Committee.

On motion of Mr. Jordan, the President was empowered to appoint the Executive Committee, and the following were appointed: Norman Buck, Wyman Elliot, P. A. Jewell, O. F. Brand and J. S. Harris, the President and Secretary being members *ex-officio*.

Delegates to Meeting of the State Agricultural Society.

Mr. Jewell moved that the President appoint the delegates. The motion was carried, but afterwards rescinded, and on another motion, Pres. T. M. Smith was appointed chairman of the delegation with power to appoint co-delegates.

The President appointed as co-delegates, E. H. S. Dartt, A. C. Hamilton, Col. J. H. Stevens and Chas. Y. Lacy.

Mr. Dartt declined and, on motion, the delegates were empowered to appoint substitutes.

New Siberians and Hybrids.

The election of officers concluded, Mr. Jewell gave the substance of his paper on Crab-apples and Hybrids verbally, promising to prepare a written paper in time for printing in the Transactions, as ordered by the Society.

The following is the paper:

NEW SIBERIANS AND HYBRIDS.

The peculiarities of the old Siberian sorts are clearly defined, but their improved descendants present no unvarying characteristics of either fruit or tree by which their Siberian parentage can in all cases be determined.

Seven years ago I sent the fruit of the Maiden's Blush crab to F. R. Elliott, of Cleveland, Ohio. In acknowledging its receipt, he expressed the opinion that it was not a crab, and mildly cautioned me against imposing on the public by sending it out as such. And yet this condemned variety was from Siberian seed, and the same lot of seed as a half-dozen other varieties sent him at the same time, the Siberian character of which he did not question. The fruit of the Maiden's Blush does not resemble the old Siberian sorts, except in size. The stem is very short, the texture fine, and the flavor very pleasant. But the tree in texture, ripening of the wood, and glossy appearance of both twigs and foliage, is clearly Siberian. Chase's Winter Sweet, on the contrary, is in tree apparently a common apple and in fruit a crab. As the result of much observation, I conclude that none of the improved Siberians retain all of the characteristics of the old sorts, and that there are few if any that do not either in tree or fruit exhibit some Siberian peculiarities. I must therefore regard it as slightly

presumptuous for any pomologist, however eminent, to attempt to settle positively the relationship of every variety by the fruit alone. After a careful examination of both tree and fruit it may not be possible to determine in every instance whether or not a variety is of Siberian origin. Any tree grown from Siberian seed is known to be either a crab or a hybrid. But it is a mooted question whether the choicest Siberian sorts are improved crabs or a cross between the crab and common apple. If a cross exists it is not the result of careful experiment, but of accident. The circumstantial evidence, however, is strongly in favor of their being hybrids. It is not probable that from the seed of the red and yellow Siberian should spring at once an apple as large as the Small Romanite and much superior to it in flavor, unless the seed from which it was derived united in itself the initial forces of both the *Pyrus baccata* and *Pyrus malus*, for gradual, rather than abrupt improvement is the order of nature. The greatly modified character of both tree and fruit, and the strong resemblance they sustain to the common apple and the crab, justifies the inference that they are of mixed parentage, and should be regarded as hybrids rather than crabs. But as it is not certainly known that any of the Siberians are hybrids, I shall not attempt to draw a line between Siberians proper and hybrids, or indicate to which of these supposed classes any particular variety belongs, but shall treat them all under the common head of improved Siberian sorts. It is not my purpose to describe in detail each variety that may be worthy of cultivation, for several of them were thus described two years since, but to compare them with the old Siberian sorts and the common apples, with the view of determining their respective value for planting in our State.

The great objection to the common apple is its lack of hardiness. Since the winter of 1872 and '73 our Society has recommended but three varieties for general cultivation, Tetofsky, Duchess, and Wealthy. Even these approved varieties are looked upon by those most familiar with the result of the experiments at orchard making in different portions of the State, as unreliable in many situations. This admission may touch our State pride unpleasantly, but it is always best to look the situation squarely in the face while we hope and labor for better things. By planting the seeds of the most hardy sorts, we may and probably shall have at some future day kinds that can be set with safety and profit on every quarter section.

We are not dealing with the more or less remote future, but with the present. To-day every farm needs an orchard. How can it be made? The most thoroughly iron-clad of our apples are not to be relied on in all situations. The Siberian, Transcendent and Hyslop crabs afford fruit fit only for culinary uses, and the trees are often sadly injured by blight. For an immediate and satisfactory solution of this important question we must look to the improved Siberian varieties. In the worst situations they are the sole reliance, and in more favorable situations they are still worthy of a prominent place, for the reason that they combine to a large extent the excellencies of both the crab and the common apple. They are perfectly hardy and free from fire-blight; early and abundant bearers, and the fruit equal in quality to the common apple. It is not every variety included in the list recommended by this Society that possesses such a fortunate combination of qualities. For the excellence and defects of the different kinds,

I refer you to the article prepared at the request of the Society two years since. There are some varieties not included in the list, to which I invite the attention of the Society as worthy of cultivation: Whitney's No. 20, a September fruit of large size and fine quality. Blushing Maid, hardy; fruit large and handsome; season, autumn. Orion, an early and free bearer, fruit quite large, handsome and of fine quality; season, October to January. Honest John, a strong growing tree and profuse bearer, large size, quality good; season, October to February.

There are several seedlings originated by Peter M. Gideon, quite remarkable for beauty, and some of them pleasant for eating. They are all fall varieties. I have on my own ground eight or ten seedlings of promise, but cannot speak with assurance of their value until they have had further trial. The extent to which the common apple can be planted with safety can be considerably enlarged by top-working the more hardy kinds on the Siberians. This process of making orchard trees is somewhat expensive, but it enables us to grow valuable varieties that otherwise we would be compelled to discard. I have tried the Red Siberian, Transcendent and Hyslop for this purpose, and the result with most varieties has been quite satisfactory. In a few instances the union of the scion with the crab stock was imperfect, and occasionally an instance has occurred of the Hyslop and Siberian body being killed by blight. I would recommend the Early Strawberry and Quaker Beauty as being quite as well adapted to top-working as any of the crabs.

Sufficient attention has not been given to the roots of orchard trees. The fall of snow in our State is less than in the States farther East. Not unfrequently for several weeks the ground is entirely bare, the cold intense and protracted. Unless the orchards are heavily mulched in the fall, the roots of the trees are apt to be killed. As usually, mulching is attended with considerable expense, and from the pressure of work, liable to be neglected, it is desirable that our trees should have roots of such a hardy nature as to make mulching quite unnecessary. The most certain method of securing this result is to root the tree from the scion. With this object in view, in grafting, a long scion and a short root should be used. When the tree is transplanted to the orchard, it should be set eight to twelve inches deeper than it stood in the nursery, according to the nature of the soil. Before planting, two upward incisions should be made near the roots of the tree, cutting through the bark and slightly into the wood, forming a tongue one-half of an inch to an inch in length. At the point where the incision is made new roots will be formed of the same character as the top of the tree. Thus we shall have in every instance each variety on its own roots. If the top is iron-clad the root will be equally so. In other words, our trees will be iron-clad at both ends, and mulching can be dispensed with without risk of injury to the roots of our trees, however severe the winter may be.

Summing up in a few words the practical lessons included in what I have said:

The Tetofsky, Duchess and Wealthy should be planted in most situations, and if top-worked on the crab, may be planted successfully everywhere. Several other varieties less hardy, valuable for their productiveness and quality of fruit, if top-worked may be planted quite extensively.

The improved Siberians are worthy of a place in every orchard, and in many situations must constitute the main reliance for some years to come. Whatever varieties are planted the precaution should be taken to have them on hardy roots.

If these suggestions are faithfully carried out, the farmers of Minnesota will soon find that it is both cheaper and more pleasant to raise fruit on their own grounds than to grow wheat and buy it.

P. A. JEWELL.

After the paper was read the following discussion was had :

Hyslop and Transcendent.

Mr. Tuttle :—Three years ago I shipped Transcendents to Chicago, where they brought \$5.00 per barrel. Last year and year before they brought \$3.50 to \$4.50. I sent Hyslops also, and these brought \$8.00 when the Transcendents brought \$5.00, but they came after other kinds, when the Transcendent was gone from the market. Still the Hyslop will bring more than other kinds under the same circumstances. Showy apples sell best.

Mr. Smith :—The Hyslop brings 50 cents to one dollar per bushel more in the St. Paul market than the Transcendent.

Mr. Elliot :—The Hyslop markets in better condition, while the Transcendent bruises and shows bruises badly. The price of the latter varies with the condition. Transcendents brought in by farmers last season sold for 50 cents per bushel, while those marketed with care and in good order sold for \$1.50.

Mr. Jewell :—If I could have but one variety, and that the Transcendent or Hyslop, would take the Hyslop, for the fruit keeps longer.

It is a slow-growing tree, and hence not extensively propagated, because nurserymen want to get a tree in the shortest possible time. Threw away the Badger State because of its slow growth.

Early Strawberry.

Mr. Brand moved to recommend the Early Strawberry for general cultivation.

Mr. Sias :—It is sufficiently hardy.

Mr. Jewell :—It has succeeded finely in Litchfield. It is everywhere the finest tree in the orchard, and quite productive.

Mr. Harris mentioned one tree dead from blight.

Mr. Jewell :—The first propagated were grafted on Siberian Crabs, and many of these failed.

Last Year's List.

The President read the action of the Society on crabs last year.

Mr. Dartt moved that the action be reaffirmed, which was seconded.

Mr. Harris:—Meador's Winter is very fruitful, but blights.

Mr. Hart:—Think the list is too long, as it will be confusing to farmers.

The motion was carried, with the amendment that the General Grant be stated least hardy on the list.

The latest action of the Society on crab apples stands therefore thus:

Recommended for general trial:

Early strawberry.

Orange. (Unanimous vote.)

Beecher's Sweet.

Minnesota. (Seven for, none against.)

Conical.

Quaker Beauty.

Maiden's Blush.

Woodlawn Red. (Tie vote, 3 for and 3 against.)

Recommended for general trial for favorable localities:

Aiken's Striped Winter. (Five for, none against.)

Recommended for general trial in localities not subject to blight:

Meador's Winter. (Four for and three against.)

General Grant.

General Grant is the least hardy of the list.

Recommended for planting in small quantities:

Hyslop. (Ten for, three against.)

Soulard. (Six for, three against.)

Recommended for general planting for those not afraid of blight:

Transcendent. (Fourteen for, one against.)

Passed over without action:

Hutchinson's Sweet.

Hesper Blush.

Aiken's Green Winter.

Apples.

The list of apples adopted last year was read.

Saxton.

Mr. Dartt:—I move that the action of last year on apples be reaffirmed. Would not, however, vote so strongly for the Saxton as I did last year.

The motion was seconded.

Mr. Tuttle:—The Saxton, while young, does well, but becomes tender as it grows older. Will not in the end give satisfaction.

Duchess and Wealthy.

By common consent it was decided to take up one variety at a time.

The Duchess was placed first on the list for general cultivation by a unanimous vote. The Wealthy was placed second on the list by a vote of 14 for and 1 against.

Melinda.

Mr. Brand moved that the Melinda be placed third on the list, which was seconded.

Mr. Jordan asked for its history and the estimation it held in the mind of its introducer, Mr. I. W. Rollins. It kept in good condition last year till June with me.

Mr. Rollins:—It has been grown in three counties but only in one district. Some trees are injured in the crotch. Its keeping qualities are as stated, and the flavor is not lost by keeping. The quality is second rate. In hardiness it is third, the Duchess and Tetofsky being first and second. It is a good bearer, bears heavy every other year, and some every year. One year I obtained seven barrels from 15 trees. It bears small. The buds stood better last winter than those of any other except the Duchess and crabs. Have had it in bearing seven years, and the oldest I have were planted 14 or 15 years ago. It stood three or four years before bearing.

Mr. Harris:—Under the rule we cannot pass the motion. I move to amend by recommending it for trial.

The amendment was seconded.

Mr. Brand:—The Melinda has not been fairly treated. The rule

was made to keep out this variety. The wood may not be so perfect as the Duchess, but none give more fruit.

Mr. Jewell:—Mr. Rollins' location is more favorable than the average of the State, though not *most* favorable. It is high prairie. The trees in Mr. Rollins' orchard, I would say, are from one-fourth to one-half dead. One side of the tree has made no growth. I think the trees died at the top as well as at the root. It is hardier than the Haas but not hardy enough to recommend for general cultivation. Have been told that the quality begins to deteriorate in March. It is never first rate. Have examined the Duchess and Melinda in the same orchard in three cases and found the wood of the Duchess always in the best condition.

Mr. Wilcox gave some history of certain varieties, and said that, in one orchard with the Duchess he saw the Melinda in pretty good condition.

Mr. Sias:—Have grown it for seven or eight years. Have fruited it for three or four years. The tree is hardy but not as hardy as the Duchess.

The amendment of Mr. Harris was then carried by a vote of 13 for and 3 against. The motion as amended was carried by a vote of 13 for and none against, by which the Melinda was recommended for trial.

Adjourned till two o'clock.

THURSDAY AFTERNOON.

The meeting was called to order by the President at 2:25.

Test for Varieties.

Mr. Harris moved that the rule for the government of the Society in recommending fruits be amended so as to read:

Resolved, That we do not recommend for general planting in large quantities any variety that is not generally known, that has not stood a test of five years in a variety of soils and situations, and that has not passed through at least one winter of great severity.

Carried by a vote of 10 for and 6 against.

Mr. Brand moved that the action of the Society on the Wealthy be reconsidered.

Lost by a vote of 4 for and 10 against.

Tetofsky.

No other action being taken, the Tetofsky was left on the list for general cultivation.

Stewart's Sweet.

Mr. Harris moved to strike Stewart's Sweet from the list for general cultivation.

Mr. Grimes:—It is hardy enough.

Mr. Jordan:—Some are dying in Rochester, and it is a crab.

Mr. Brand:—A crab without question.

Mr. Grimes:—It is an apple because the fruit has a short stem.

Mr. Jewell:—The long stem is not an infallible characteristic of crabs. I know of no uniform characteristic of crab apples.

(A question was asked concerning its productiveness, to which no answer was made.)

Mr. Dartt:—A want of knowledge as to its productiveness is proof that it is not generally known. It may be hardy while young, but not when old like the Saxton in this respect.

Mr. Stewart:—The trees are scattered from Minneapolis to Manitoba, and I hear good accounts from it. It is my opinion it will bear enough to make it profitable. It has had a hard chance because of the grasshoppers eating them up in many regions.

Mr. Harris mentioned a Transcendent that at 15 years bore 18 bushels.

Mr. Harris' motion to strike from the list for general cultivation was carried by a vote of 9 for and 1 against.

Mr. Harris moved to recommend for trial, which was carried by a vote of 11 for and none against.

Haas.

The Haas recommended for trial by a vote of 13 for and none against.

Price's Sweet.

Price's Sweet was allowed to stand on the list for favorable localities, no objection being made.

Saxton.

It was moved to strike the Saxton from the list for favorable localities. Lost by a vote of 5 for and 5 against.

Mr. Dartt:—I would retain it because of its earliness in bearing.

Mr. Hart:—Would as soon dig up my Duchess.

Mr. Brand:—I have planted 100 trees of it.

Mr. Jordan:—I fear we would be considered changeable if we should strike it off. We are going to have a change of climate, we have been having a series of severe winters and now we may have something different.

Mr. Jewell:—Its good points are that it bears young and bears well, and if so trained as to have it bear while young it will pay to plant.

The vote was reconsidered and the motion to strike from the list was again made and lost by a vote of seven for and nine against.

Fameuse and Plumb's Cider.

The Fameuse and Plumb's Cider were allowed to stand where placed last year on the list for "most favorable localities."

Walbridge.

A motion to take the Walbridge from the list for "most favorable localities," and recommend for "trial" was carried by a vote of 10 for and none against.

St. Lawrence.

The St. Lawrence was taken up and Messrs. Wilcox, Pearce and others said good things of it.

Mr. Jewell moved to recommend it for "favorable" instead of "most favorable localities."

Messrs. Brand, Hart, and others also spoke favorably of it and the motion was carried by a vote of 14 for and none against.

Utter's Red, Talman's Sweet and Alaska.

Utter's Red was allowed to stand where placed last year on the list for "favorable localities," as also Talman's Sweet on list for "most favorable localities," and Alaska on list for "trial by amateurs and pomologists."

Red Astrachan.

Mr. Harris moved to recommend the Red Astrachan for general trial.

Mr. Grimes :—It has never borne with me.

Mr. Smith :—Have one on Paradise stock, and it has borne well enough so as to pay.

Mr. Jewell :—Not more than one tree in twenty that has been planted in this State is now living. It fails in so many cases and succeeds in so few cases that we had better let it alone.

Mr. Dartt :—In Wisconsin it lives, but does not bear.

Mr. Tuttle :—It bears sparsely for many years, but when it gets older it bears heavy alternate years, and proves profitable.

Mr. Wilcox :—Have had it stand where the Transcendent was killed. Has done as well with me as the same number of any other kind of trees.

Mr. Harris :—It has stood as well as any, the Duchess excepted, since the hard winter.

Mr. Pearce :—I would recommend it only top-worked. Mr. Barry says should not use it on his own stock. It is a shy bearer but a profitable tree.

Mr. Carter spoke unfavorably of its bearing.

Mr. Hart :—Would not recommend it as a standard, but as a dwarf it bears enough in one year to pay its cost.

It was moved to recommend it for trial in favorable localities when top-worked, which was carried by a vote of 8 for and none against.

White Astrachan.

Mr. Harris moved to recommend the White Astrachan for "general trial" throughout the State. Carried by a vote of 8 for and 1 against.

Peach Apple.

Mr. Brand moved to recommend the Peach apple for trial.

Mr. Brand :—It is later than the Duchess and entirely hardy. The motion was carried by a vote of 5 for and 1 against.

List Recommended.

The action of the Society on apples was therefore as follows :

Recommended for general cultivation :

- 1st. Duchess of Oldenburg. (Unanimous vote.)
- 2d. Wealthy. (14 for, 1 against.)
- 3d. Tetofsky.

Recommended for trial :

- Melinda. (13 for, none against.)
- Stewart's Sweet. (11 for, none against.)
- Haas. (13 for, none against.)
- Walbridge. (10 for, none against.)
- Peach Apple. (5 for, 1 against.)

Recommended for favorable localities :

- Price's Sweet. (10 for, 1 against.)
- Saxton. (9 for, 7 against.)
- St. Lawrence. (14 for, none against.)
- Utter's Red. (4 for, 4 against.)

Recommended for most favorable localities :

- Fameuse. (14 for, 3 against.)
- Plumb's Cider. (7 for, 5 against.)
- Talman's Sweet. (12 for, 5 against.)

Recommended for trial by amateurs and pomologists :

- Alaska.

Recommended for trial in favorable localities when top-worked :

- Red Astrachan. (8 for, none against.)

Recommended for general trial throughout the State :

- White Astrachan. (8 for, 1 against.)

Winter Fruit.

Mr. Sias then read a paper on Winter Fruit which was accepted and ordered incorporated in the Transactions. The following is the text in full :

WINTER FRUIT.

ROCHESTER, Minn., January 17th, 1876.

Mr. President and Gentlemen of the Minnesota State Horticultural Society :

Where shall we find hardy, reliable winter varieties, of good quality, of the common apple (*Pyrus malus*?) You need only refer to the last annual report of this Society to convince you that right here is the great want of the State. Hence, the question of where shall we find desirable winter varieties of the common apple, will, I think, be acknowledged by all to be a pertinent one, and unless we can add something to this very meager list for general cultivation, it will certainly count us but very little as an im-

migration document to set before the great Centennial Exhibition, soon to be opened at Philadelphia. As it now stands it would do Minnesota great injustice as a fruit-growing State. And I will say in this connection, that doubtless the chief reason why our winter list is so very small, is owing partly or wholly to the fact that the men who are now foremost in this noble work of making Minnesota Seedlings a specialty, are men of taste, refinement, and rare modesty. Had they possessed a hundredth part of the "cheek" of some of those unscrupulous fellows who have been flooding the country with untried, half-hardy varieties of distant origin, and of little or no merit, they would have had several of their promising new seedlings that are destined to add millions to the wealth of the Northwest, fairly and squarely before the public years ago. And meanwhile these public benefactors have been struggling along, in some cases through sickness and great tribulation, sewing together old vests and rags for raiment, to enable them to save a little money to buy seeds to continue this grand work, that is one day to make us all "wealthy." Such heroic enthusiasm, under peculiar and most trying circumstances, contains all the elements of great and final success. Now how have these great horticulturists been treated or appreciated by what is sometimes termed a generous public? For an instance, what great encouragement have they derived from our institutions, gotten up for the so-called purpose of encouraging agriculture and horticulture? Since the time that Horace Greeley made the ill-advised, or careless remark, that "you can't raise apples in Minnesota," the croakers appeared to take out a new lease of life, and to put on all the self-assurance and dignity of a man who knew just what he was driving at! At our county agricultural fairs in some cases they offered the liberal premium of three dollars for the best exhibition of fruits, and when the lucky man, who had been watching this fruit for three long days, called for his money, he was very politely informed that the institution had "busted," and that it would be utterly *impossible* for him to pay over ten cents on the dollar, while at the same time this "busted" society could pay three hundred dollars for the best exhibition of *cruelty* to that *noblest* of all animals, the horse! And I am inclined to think that this is just about a fair exhibit of the public generally towards these most useful tillers of the soil. And now to go back to our subject of where shall we obtain winter varieties of the common apple. Thus far we have depended chiefly on the Eastern and Middle States, and as this is known to be one of the leading causes of so many failures, you will not of course be very anxious to invest anything further in that direction. Then again, some say we should look to Russia, or Northern Europe, for the best results. Now let us consider this for just a moment, as to winter fruit. My experience in shipping trees south makes me skeptical in regard to finding good keepers, that originated as far north as St. Petersburg, Russia. (We may import varieties from there that originated far south of that point.) And out of one hundred varieties that I am now testing of Russian origin, I should be disappointed if a single variety proved a good keeper. November 6th, 1860, the memorable day of Abraham Lincoln's first election, found me distributing trees to our rebellious brethren, on Green River, in the southern part of Kentucky. These trees originated mostly in the Eastern States, and were the best keepers and most suc-

cessful varieties in those States, (we can profit by their experience if we will,) viz., Baldwin, Boston Russet, Northern Spy, Porter and R. I. Greening. While no farther south than Glasgow, Ky., I found these long keepers (with us) decaying badly in October, and was informed by old citizens there, that the best keepers that originated as far north as New England, were nothing but fall varieties with them, and they had always been disappointed in trying to get good keepers from the north. Now the difference in latitude between this place and St. Petersburg is some fifteen or sixteen degrees, while the difference between Boston, Mass., and Bowling Green, Ky., is less than one-half this distance.

Therefore, judging from the long experience of fruit growers in the older States of the Union, and from my own limited knowledge of the business in this State, I am forced to the conclusion that our greatest success with long keeping, heavy bearing, and with varieties of superior quality, and trees of large size and longevity, will of necessity be with Minnesota seedlings. And this doctrine of seedlings will not only apply to the apple, but also with equal force to the pear, when propagated from seed of such hardy varieties as the Flemish Beauty. Seedlings also of our best native plums, and so on through the whole catalogue of our different fruits. I wish to say in this connection that I very much admire the action of this Society, especially since the severe winter of 1872-3, in ruling out everything not *positively* known to be hardy.

And now in conclusion, I suppose every man who owns a rood of land will want to plant something to commemorate the great centennial event of 1876, and by planting Minnesota seedlings he will not only do the very best thing *possible* to mark this great event, but what is of far greater importance to Minnesota at the present time, he will also mark an important epoch in the development of Minnesota as a fruit-growing State.

A. W. Sias.

DISCUSSION.

History and Characteristics.

Mr. Sias was then called on to give the history and characteristics of these varieties. He said they were started on Greenwood Prairie, a part of them 19 years ago. The seed was brought from Northern Vermont. The location in which they grow is "favorable," but not "most favorable." It is in the valley of the Whitewater and only a few feet above the water's edge. Rollin's Russet stands at the head of the list. The parent tree was killed three or four years ago by the borer. The year before that I cut scions from it and found them healthy. That tree has produced several barrels of apples. The fruit keeps till June or even July. The parent tree of Rollin's Prolific produced over three barrels in one season. It is a pie apple. The Elgin Beauty is fully as hardy as the Duchess.

None have had any root protection. All are winter varieties. Rollin's Pippin and Wabasha are first class eating apples.

Mr. Jewell :—Have seen these apples. Of the six varieties only two fixed my attention. The Wabasha is nothing remarkable. The Elgin Beauty is as fine as any Duchess I ever saw. It never lost any growth in consequence of the winter of 1872–3. The apple is of fine appearance. The tree is in better condition than the Melinda. (A full description of these apples will be found in the appendix.)

Centennial.

Business arrangements for the Centennial Exhibition was the next order taken up.

Mr. Grimes :—It will require some one to be there to receive, display, and take care of the fruit, and this Society must send some one.

Mr. Elliot :—There should be a committee of three to confer with the State Centennial Board.

Mr. Harris :—The State Agricultural Society is intending to make an exhibition of the products of Minnesota, and depend much upon the Horticultural Society to aid them.

Mr. Dartt moved that this Society exhibit in connection with the Agricultural Society. The motion was carried.

Mr. Dartt moved a committee, consisting of Messrs. Elliot, Harris and Jewell, be appointed to confer with the Agricultural Society or its Executive Committee.

Mr. Harris suggested that it might not be policy for him to act on that committee as he was a member of the Executive Committee of the Agricultural Society.

Speeches were made by Messrs. Hart, Jewell, Dartt and Elliot.

Mr. Jewell moved to amend by dropping the name of Mr. Harris and substituting Mr. Lacy. The amendment was accepted and the motion carried by which Messrs. Elliot, Lacy and Jewell were appointed such committee.

A motion was made by Mr. Harris that the Horticultural Society sustain the committee just appointed in whatever they may do after conference with the Executive Committee of this Society.

The motion was disposed of by instructing the committee to report to the Executive Committee of the Society.

Mr. Pearce moved a resolution pledging the efforts of the Horticultural Society toward making an exhibition at the Centennial, but no action was taken on the motion as it was considered best to await the action of the Legislature.

Mr. Dartt in the chair.

Final Resolutions.

Mr. Elliot moved that a committee of three be appointed on final resolutions, which was carried, and the chair appointed Messrs. Elliott, Jewell and Grimes.

Insect Enemies.

The next order taken up was a discussion on insect enemies.

Twig Pruner.

Mr. Harris showed a twig pruner which he had raised. It did considerable damage a year ago last summer. Oak branches from one inch in diameter to the size of a twig were cut off by it. He had found the larva in a twig which it had cut off and which had fallen to the ground. The larva then goes into the ground and comes forth the next season as a perfect insect, lays its eggs in the branches where they hatch into larva, which repeat the injury.

Beetle in the Apple.

Another insect, belonging to the beetle tribe, he found in the apple. He got the larva of this instead of the larva of the codling moth. He put into the bottle with the beetles hatched from these larva, some larva of the codling moth, and the beetles ate them up. The question raised was whether we have in these beetles an enemy of the larva of the codling moth. Another beetle he found in a rose bush. The rose broke down, and digging into the ground, he found the bush girdled.

Borer.

Mr. Sias showed beetles about an inch long. On a tree which had died suddenly he found them. The insect he had observed to bore its whole length into the tree in 2 to 5 minutes.

Grape Curculio.

Mr. Harris spoke of the grape curculio which left its eggs in the

grape. Prof. Riley says these should be watched and the stung specimen picked off and destroyed to prevent the multiplication of the insect.

Summer Meeting.

The committee on summer meeting then reported as follows :

We submit that we think it expedient to hold a summer meeting and exhibition some time between the 15th of June and 10th of July, at the State University.

The report was accepted and adopted.

Grape Borer.

Mr. Smith mentioned a square headed beetle found in the grape vine. It entered above a bud and worked down inside the vine, killing it. A neighbor had two hundred killed in this way.

Communications, &c.

The Secretary moved that all communications prepared for and not read at this meeting be submitted to the Executive Committee for approval before insertion in the Transactions. The motion was carried.

Blight.

It was then moved to take up the subject of blight but the Society resolved to defer it.

Co-operation of County Societies.

Mr. Elliot moved to take up the discussion "How shall we secure the more active co-operation of County Societies," which was carried.

Mr. Smith :—We can only do it by each member being a committee of one to organize a local society in his own county. The members thereof will at the same time learn much from each other, while they increase the usefulness of this Society.

Mr. Elliot :—Each county society is entitled to fifty reports of the State Society, and if a county society can't be formed at once then let some neighborhood form a society and call it a County

Society, and gradually gather in all around until it represents the whole county.

Olmsted County.

Mr. Pearce:—Our County Society has met with reverses, but we still meet.

Mr. Sommerville:—I have not met with them for the last year on account of business. Am sorry for it, and hope we shall restore the society, and will try to do so. Have been in the State nineteen years. Am a farmer with no ax to grind. Have derived benefit from my visit here. Know better what to plant from notes taken here. Will try and reorganize our society and help along the State Society.

Mr. Sias:—Am a member of the same society. We had two meetings last year.

Winona County.

Mr. Hamilton:—Our society failed to report for two years because the interest was diminished by the winter of 1872-3, and because farmers do not come in and take an interest in the proceedings.

Mr. Harris:—Think it would be a good plan for the State Society to get up a circular with a sample constitution and other information. Some of the best information and results come from small local societies. He instanced what the Lemon Weir Valley Society had done to improve the taste of the neighborhood and increase the cultivation of flowers and shrubs.

THURSDAY EVENING.

The meeting was called to order by the President at 7:25.

Pear Culture.

A verbal report on pear culture, by Mr. Hart, was called for. Mr. Hart reported as follows:

Seedlings from seed sown on sod all died but one. This is an excellent pear. It has been sold in Winona for the past six years.

Now have 75 trees, which look healthy, and from which I expect fruit next year. I see no reason why we should not raise pears. They like our soil and will not root-kill if we can keep the tops. Would recommend every man to raise a few. When I can't raise pears I will leave the State. I buy the trees and do not propagate. They require high, dry situations, but not poor soil, unless we wish to kill the tree. Have the Flemish Beauty and Louise Bonne de Jersey and others, all on pear stock.

Mr. Grimes inquired about the Birkett Pear.

Mr. Jewell:—The Flemish Beauty is the hardiest. There is no soil so poor that it will not live if it does not freeze out. Up to '72-3 many trees were in fruiting. One in La Crosse bore four bushels one year. Our experiments in pear culture have not proved a success. We can't recommend it for general planting. In a few very favorable localities it may succeed. There are some fine pear trees of the Flemish Beauty over back of the lake, in Winona, but there is not one place in a thousand like that. Would recommend to try it if you have a very favorable place on not very rich soil. If it has not protection from the sun on the south, had better protect with an evergreen.

Mr. Sias:—I have some pears on the Juneberry and Thorn. Has any one had any experience with it thus worked?

Mr. Jewell:—Have it on the Mountain Ash, but not long enough to tell anything about it. Barnett Taylor had several on thorn stocks.

Mr. Smith:—It succeeded on the Thorn in Vermont.

Mr. Hart:—I planted in a shaded place, and there it failed. Then gave it a southern exposure and it succeeded.

Mr. Dartt:—I concur with Mr. Jewell in doubting our ability to raise pears successfully in Minnesota. Raised them before the hard winter, but not since. Where we can raise tender varieties of apples we can raise hardy pears. In recommending for trial in most favorable localities would also make the provision that the experimenter have plenty of money to experiment with.

Mr. Brand gave two cases to prove that protection from the sun is needed. In similar cases when the trunks were wrapped with straw rope the trees lived. With protection from the sun, we can raise the pear with success in many localities.

Mr. Harris:—In times past I have been a strong advocate of pears. But some cause has destroyed the pear trees in every part of the State. Before 1872-3, hundreds of them looked as well as the Duchess. Shall the pear be known no more in Minnesota?

The cold is not the only cause of destruction. Blight is one of them; a large proportion of the destruction is due to that. Young trees did not die at that time, and if cold was the cause of death, why did the old ones die and the young live? I still have faith that we may again have on our tables such pears as we used to have. Have had 50 to 100 trees, and never lost one from cold. If we can get protection from the sun it seems to me we can yet raise pears successfully. I do not give it up yet. I have ordered more trees.

Mr. Jewell:—Many zealous horticulturists still refuse to look the truth squarely in the face and see that the trees died because they were not hardy enough to live, that they died because they could not stand sun and cold.

Mr. Smith:—I have had the trees killed by blight.

Mr. Pearce:—Have tried pears many times, and failed every time. A neighbor graded his yard up with stones and rubbish, and put on a little soil, and planted the Flemish Beauty. They have never lost one inch of growth. I have faith that they will live and bear.

Mr. Harris announced that a letter just received, stated that Messrs. Fowler and Judson, of the State Agricultural Society, could not come to the meeting.

Celery.

The paper of Mr. Brimhall on the cultivation and preservation of Celery was then read and ordered filed for publication in the Transactions. The following is the text in full:

CULTIVATION AND PRESERVATION OF CELERY.

Seed and Varieties.

To obtain good celery, be sure to get good seed to begin with, and of the best known varieties, one of which I claim—the Boston Market—stands first for general cultivation and market gardening. It grows large, stocky, solid, crisp, tender, and nutty flavored when properly grown.

Sowing.

Seed being obtained, should be sown in a hot-bed or cold frame being prepared in time, with very light, rich, sandy loam. Time can be gained by tying the seed up in a cloth or bag, tight together, and then put it into hot water enough to cover the package, and let it remain there until down to blood heat; then mix double the quantity of dry sand with the seed and

sow in the prepared bed, and cover about one-fourth of an inch deep. It should be kept moderately warm and wet, and partially shaded during hot weather.

Transplanting.

When the plants are about two inches in height, they should be transplanted two inches apart in equally rich soil, and be kept well sprinkled with soft water every evening during bright, sunshiny weather. When the plants are from three to four inches high, every other plant each way should be taken out to another bed, or may be planted in the field where wanted to be grown. Great care should be taken in removing the plants, that all the roots be secured with a clump of earth with them. To secure this the soil in which the plants are growing should be well saturated with soft water before removing the plants at any stage of their growth. When it is desired to have the plants remain in the bed until they are six or eight inches high, they should be thinned out to about six inches apart that all may grow strong and stocky.

Soil and Preparation.

The soil in which celery is to be grown should be made *very* rich and loosened deep by double-plowing or subsoiling to the depth of one foot or more, and should be plowed twice to thoroughly mix the manure and pulverize the soil; then harrow, and if lumpy, roll the land, and get it in the best possible condition to be had.

Planting Out.

I abandoned the plan of growing celery in trenches years ago, and now grow it on the top of the soil with the most excellent success, in the following manner: When the plants are very large I mark my land out in rows six feet apart with a single shovel plow, and when using small plants use the line and dibble, setting the plants six inches apart in the row. June and July are the months for planting out celery, when good strong plants are to be had. The latter part of July is the best for winter celery. Always select a cloudy day for planting out celery and remove all side sprouts or succors, and press the earth well around the roots.

Cultivation.

Hoe the plants as soon as possible after setting, to keep the ground from getting hard and crusted. Continue to cultivate it as often as every ten days. When the plants are one foot or more in height, the land being well cultivated between the rows, take a line and loop it around the first plant in the row you wish to hill, and continue to loop the line around each plant to the end of the line. This is to keep the tops or stalks close together that no earth can get in the center. Great care should be taken never to get any earth into the heart or center of the plant. In earthing up, do not get above the heart until the last earthing to bleach and protect it from frosts. This should be well done by the first of October

Celery can be grown as a second crop after early peas, potatoes, &c., &c. The earthing up can be mostly done with the plow and horse-hoe, with a careful hand to use them.

Securing.

Time of putting away varies according to the weather, but should be secured by the first of November, always selecting dry, pleasant weather in handling. The same rule in its cultivation after the plants are set out.

Preservation.

To keep celery in and through the winter season in large quantities in this climate is no small task, where the weather is so changeable, and I hardly feel competent for the task, though I have kept it until the first of April. It is very evident that it should be kept cool, not where it will freeze, with some light and circulation of air. The soil in every case should be free from clay and gravel. A moderately dry sandy loam is the best in which to put it away. One very good way is to select a southern slope, dig trenches two feet deep and eighteen inches wide to set it in; plow the earth away from one row at a time with one horse; then with a fork or spade loosen the plants and remove to the trench, setting them in an angle of about sixty degrees, and not so close but that there will be a little space between them; press the earth well on the roots and earth up nearly to the tips, and fill up the trench with dry leaves or straw. Lay some short pieces of boards across the trench six feet apart, and cover the trenches with two boards one foot or more wide, letting them lap over each other in the middle to keep out all rain or melting snow. Then spread evenly over the trench straw or hay, to the thickness of one foot or more and four feet in width, and as the weather gets colder add more straw, and cover it over with six or eight inches of horse-manure. This can be taken out any pleasant day at noon.

Another very good way for storing small quantities is to take a deep hot-bed frame, dig a pit for it two or three feet deep. Set the frame, set out the celery as before stated, fill up the top space with leaves or straw and cover over with boards. Then hay or straw with manure at the outside to keep out the frost. When one has a cool cellar or root-house, by making one floor above the other, can store quite a good quantity, and protect by dry straw.

A great deal depends upon the condition of the soil in which the celery is put away. It should be moderately dry and free from all vegetable matter. White clean sand is very good when easily obtained. Peat soil is one of the best in which to grow celery, and also for storing it away. There are numerous large tracts of peat lands in this State, and, at no very distant day, we may expect to see these very valuable lands devoted to the cultivation of celery if not to cranberries.

WM. E. BRIMHALL.

DISCUSSION.

In the discussion which followed Mr. Harris said he would re-

commend the Sandringham Dwarf, White Celery, as being solid, crisp, of dwarf habit, and of a creamy white color.

Blight.

The next in order was a discussion on blight.

Lime.

Mr. Brand stated the substance of a communication from the Hon. Charles Clark, proposing as a remedy working lime into the soil and sprinkling the trees with it when moist with dew.

A letter from Col. W. H. H. Taylor, of Minneapolis, was read by the Secretary, recommending the same remedy, and stating that several persons had tried it with the same result, namely, success.

The Secretary stated that judging from a scientific point the efficacy of this remedy was not at all improbable. That "blight" is supposed to be due to the growth of a fungus, and that the presence of the alkalies generally, such as lime, potash, soda, &c., is unfavorable to the growth of fungi. Hence the application of lime may very likely prove valuable for the prevention and cure of "blight."

Mr. Scott stated that his father used lime freely, and did not suffer from blight so much as his neighbors.

Mr. Bunnell:—First noticed the effects of blight in the valleys. Then found some on the prairies.

Root Pruning.

Mr. Jewell:—Hope future experience will prove the value of this remedy. Root pruning I have had some experience with. Whatever checks the growth of the tree checks the blight. But if we depend on root pruning we must repeat it every three or four years. I ran a plow along the rows of trees, cutting off the roots, and the blight was arrested. Think if there is virtue in alkali our soil ought to be unfavorable to blight.

Further remarks were made by Messrs. Dartt and Pearce, when the subject was dropped.

Grounds of Public Buildings.

Prof. Phelps then offered the following preamble and resolution:

WHEREAS, The general dissemination of a knowledge of horticulture is one of the most important means for promoting the interests, improving the taste and advancing the happiness of the people; and,

WHEREAS, Nothing can contribute so efficiently to these great objects as the actual *demonstrations* afforded by the cultivation, under competent direction, of the best varieties of plants, flowers, and shrubbery; therefore,

Resolved, That in the judgment of this Society it is the policy and duty of the State so to arrange, decorate and cultivate the grounds connected with its public educational institutions as not only to afford examples of the varieties best adapted to our climate, but the means for thorough and practical instruction upon this subject, to those who are to become the teachers of our children and youth.

It received a second and Prof. Phelps made some remarks in support of the resolution as follows:

Mr. Phelps:—In offering these resolutions I desire to express my high appreciation of the work which the State Horticultural Society has undertaken to perform. The first duty of a free commonwealth is to educate the people, and thus qualify them for their weighty and solemn responsibilities as citizens. I can utter no more truthful aphorism than that *the true wealth of a nation is its cultivated sons and daughters*. It is none the less true that the education of the people should be such as *best befits their condition and circumstances*. The masses and the industrial classes are identical. Hence the masses should be taught those things that most concern their daily life, and that will best minister to their enduring happiness and prosperity. Among these things horticulture, the growth of plants and flowers and luscious fruits, that so minister both to the beautiful and the useful, must ever occupy a prominent place.

What greater boon could be bestowed upon the people than the *disposition* and the *ability* to beautify their homes and surround them with that "which is pleasant to the sight and good for food." How is the tendency of our youth in the rural districts to rush into the din, the turmoil and the temptations of city life, to be checked, if not by such influences as will make them contented with their lot amid the freedom and the purity of the country that God has made? A knowledge of horticulture and of the science of cultivating the soil, is the great need of the hour, and I believe that the State should do everything in its power to diffuse this knowledge among its rural population.

As a step in this direction permit me to suggest that it should begin by a *suitable cultivation and ornamentation of the grounds surrounding its public institutions*, particularly its State University

and its three Normal Schools where its teachers are trained for the high vocation of instructing its children and youth.

I ask you, Mr. President and gentlemen, to look about this fine edifice in which you are assembled, and see what a veritable cow pasture it is. Open to the street, ungraded, unadorned, unenclosed, a disgrace to the State! Many years ago, when these apartments were planned and this building was located, it entered into the hearts of those who *looked to the future*, that here a botanical garden should be laid out, in which might be cultivated those plants, flowers and shrubbery which had been proved to be the best adapted to our soil and climate, and which might afford perpetual "object lessons" to the thousands of ingenious youth that should assemble here to be fitted for duty as teachers under our great common school system. And why not? What noble, better, more useful purpose could these premises be made to subserve? To what end more practical or beneficent could a few thousand dollars be appropriated? Think for a moment of the extent to which the practical lessons thus imparted would reproduce around the country school houses and rural homes of the people. Certain it is that the noble science of horticulture which you, gentlemen, are laboring so earnestly to promote will never be taught in our schools until our teachers can be made familiar with its theory and practice, and this familiarity can never be acquired until its objects and living illustrations are at hand to attract the senses and stimulate to earnest and thoughtful study. Not to weary you at this late hour, gentlemen, let me commend this thought to your candid attention. I know of no way in which your worthy and self-denying labors, as a society, can be made to receive a more powerful impetus. I know of none that would be more fraught with blessings to the people in the diffusion of sound information concerning one of the noblest and most useful of arts.

Messrs. Harris and Jewell in a few remarks supported the resolution very warmly, and it was then carried unanimously.

Evergreens.

The discussion on evergreens was then opened.

Mr. Pearce:—It is one of the most important subjects we can discuss. We want them for protection before we can raise fruit. The best for this purpose is the Scotch Pine. This for windbreaks. For ornament, would plant Balsam Fir, Norway Spruce, Black and White Spruce, Mountain Pine, Dwarf Pine, and Austrian Pine.

The list of evergreens last adopted was then read by the President.

Norway Spruce.

Mr. Dartt moved to place the Norway Spruce at the foot of the list.

Mr. Pearce:—That would be a mistake. It is the handsomest tree in the grounds of Rochester.

Mr. Harris:—I worked hard to get it at the head of the list, but the last two or three years proves that it is too high. If a reddish color is better than green, then the Norway is the right tree.

Mr. Jewell moved to place the White Spruce at the head and the Norway at the foot. If we can shade it on the south with a house or similar object it may answer. But the White is so near like it that most persons do not distinguish them. The White is far more hardy and satisfactory.

Mr. Elliot:—Am now convinced that Brother Ford knew best when that list was made.

Mr. Jewell's motion was lost on the first vote, by a vote of 8 for and 9 against.

A second vote was taken which resulted in a tie, 10 for and 10 against.

Mr. Pearce:—It will do well on good soil, though it is liable to injury from the sun.

Mr. Smith:—Have had them color badly, so that they were unsaleable, on clay soil and northern exposure.

Mr. Grimes:—While young they are ordinary, but when they get to be fifteen feet high they are very beautiful. It is hardy in good situations, while hardly any evergreen is hardy in very bad situations. I have evergreens unmistakably hardy, which are yet injured because they stand in a very exposed position where the wind draws round a corner.

White Spruce.

Motion was made to place the White Spruce first on the list.
Carried by a vote of 10 for and 8 against.

Norway Spruce.

Motion was made to place the Norway Spruce second on the list.

An amendment was offered to place it third on the list, which was lost by a vote of 7 for and 12 against.

Motion to place it second was then carried by a vote of 11 for and 8 against.

Scotch Pine.

Mr. Jewell moved that the Scotch Pine be placed third on the list, and in answer to the question, "for what purpose?" replied, "for all purposes for which evergreens are employed." For a vindbreak there is nothing better.

Carried by a vote of 13 for and none against.

The Balsam Fir

was placed fourth on the list by a vote of 15 for and none against.

Austrian Pine.

Motion was made to place the Austrian Pine fifth on the list.

Mr. Jewell:—It is more sensitive to the sun than Norway Spruce. I tried to raise it for six years and then gave it up. Would drop from the list.

Mr. Pearce:—It is darker and the needles twice as long as those of the Scotch Pine. It sears over but does not kill.

Mr. Grimes:—It is finer than the Scotch Pine, but the leading shoot kills back.

Mr. Smith:—Have had one very badly injured.

White Pine.

Motion was made to amend by substituting White Pine.

The amendment was carried, and with it the resolution placing White Pine fifth on the list, by a vote of 11 for and none against.

The American Arbor Vitæ

or White Cedar was placed sixth on the list by a vote of 11 for and 2 against.

The Red Cedar

was placed seventh on the list by a vote of 11 for and 4 against.

Red or Norway Pine.

Motion was made to place the Red Pine 8th on the list.

Mr. Dartt:—It is a native, which is in its favor.

Mr. Grimes:—That is not much of a recommendation, as it is better to get it as grown from the seed in the nursery than from the forests.

The motion was carried by a vote of 11 for and none against.

Austrian Pine.

The Austrian Pine was then placed 9th on the list by a vote of 9 for and 7 against.

Irish Juniper.

Messrs. Smith and Pearce:—It kills every year.

Hemlock Spruce.

Mr. Smith:—I have a specimen that has lived several years.

Mountain Pine.

The Mountain Pine was placed 10th on the list by a vote of 8 for and none against.

Siberian Arbor Vitæ.

Motion was made to place the Siberian Arbor Vitæ, for small yards, 11th on the list.

Mr. Elloit:—By pruning it can be trained into any form.

Mr. Grimes:—It grows up in fine fronds, is perfectly hardy, not injured by cold or sun.

Mr. Jewell:—Have tried it for seven years and my experience is the same. It is much finer than the native and needs no pruning.

The motion was carried by a vote of 14 for and none against.

Black Spruce.

Motion was made to place the Black Spruce 12th on the list.

Mr. Jewell:—It is worthless, not worth handling, and the list is long enough.

Mr. Brand:—Have a perfect and fine tree in my grounds.

Mr. Jewell:—They are almost invariably ragged and untidy.

Mr. Brand's looks much like a White Spruce.

M. Carter:—I have two that I call Black Spruce which are perfect and 'handsome.

Mr. Brand:—So many trees are ill shaped because they are brought from the forest. Mine were grown in the nursery.

Motion was made that the resolution lie on the table, which was carried.

Trailing Juniper.

Motion was made by Mr. Stewart that the Trailing Juniper be placed 12th on the list, which was carried by a vote of 13 for and none against.

The discussion on evergreens then closed.

Summary.

The action of the Society in recommending evergreens stands therefore thus:

- White Spruce, 1st. (10 for, 8 against.)
- Norway Spruce, 2d. (11 for, 8 against.)
- Scotch Pine, 3d. (13 for, none against.)
- Balsam Fir, 4th. (15 for, none against.)
- White Pine, 5th. (11 for, none against.)
- American Arbor Vitæ, 6th. (11 for, 2 against.)
- Red Cedar, 7th. (11 for, 4 against.)
- Red or Norway Pine, 8th. (11 for, none against.)
- Austrian Pine, 9th. (9 for, 7 against.)
- Mountain Pine, 10th. (8 for, none against.)
- Siberian Arbor Vitæ, 11th. (14 for, none against.)
- Trailing Juniper, 12th. (13 for, none against.)

Protection of Apple Trees.

John Hart made a motion that the Society now take up the discussion of protection for apple trees. Carried.

E. H. S. Dartt commenced the discussion. Thought there should be some kind of a windbreak, such as white willows or some kind of hedge; thought that orchard trees should be at a space of at least four rods from the hedge or windbreak. Would recommend

the Scotch Pine for a row now and then among the orchard rows, and occasionally one in the orchard row interspersed.

Mr. Bunnell would set trees upon a northern exposure; would bank up earth around the tree just before freezing weather; also protect the trees from the hot sun, head the trees low and place a board on the south side of the tree.

J. S. Harris would coincide with E. H. S. Dartt's views.

A. W. Sias would plant the evergreens among the orchard trees for protection, such as Scotch Pine and Spruces.

Mr. Pearce concurred with the others about the planting of evergreens; would not prune the trees after first year.

O. F. Brand would recommend the wrapping of the bodies of the trees with some cheap wrappings, and leave them upon the trees both summer and winter.

P. A. Jewell would not plant a tree that needs such attention, for the farmer could not be induced to take all this pains.

At this point the discussion was closed.

Next Annual Meeting.

Mr. Dartt invited the Society to hold its next winter meeting at Owatonna, and on motion it was resolved to hold the next annual meeting of the Society at Owatonna.

Final Resolutions.

The committee on final resolutions then reported the following:

Resolved, That this Society return its sincere thanks to the Chicago, Milwaukee & St. Paul, the Winona & St. Peter and the Southern Minnesota Railroad Companies, for their generous action in selling return tickets over their lines to those who have attended this meeting, at one-fifth of their regular fare; that we look upon this generous action as a recognition of the efforts we are making to develop the horticultural resources of the State, and to diffuse information relating thereto; and that we recognize in it obligation to continue these efforts with increased zeal and enthusiasm.

Resolved, That the thanks of the members of this Society from abroad are hereby tendered to the Committee on Entertainment, and the citizens of Winona, for the hospitable manner in which we have been welcomed and entertained.

Resolved, That the thanks of the Minnesota Horticultural Society are tendered to Prof. W. F. Phelps for his generous donation of the use of the hall, for the invitation to witness the opening exercises of the school and the privilege of examining the many valuable geological and mineral specimens contained in the museum.

Mr. Smith offered a resolution thanking Prof. Phelps for suggesting the change of halls for holding the meetings of the Society.

The resolution was carried by a rising vote, and Prof. Phelps acknowledged it in a few appropriate remarks.

The Secretary then moved that the Society express its entire satisfaction with the exercises of the Normal School so far as we have witnessed them.

Mr. Jewell was glad this resolution had been offered, and made some very appropriate remarks in approval of the school.

The resolution was passed unanimously.

Bill of Secretary.

The bill of the Secretary to cover expenses, as detailed in his report, was allowed.

Mr. Harris then made a few very impressive remarks, stating that this had been one of the most pleasant, harmonious, interesting and valuable meetings the Society had ever held. He compared its present condition and reputation with its condition and reputation when the Society was first organized as the Minnesota State Fruit Growers' Association, when it had but twelve members, and when these were considered insane. He concluded by encouraging the members to continue the good work, and asking God to stand by and bless them in their labors.

The Society then adjourned.

ARTICLES ON EXHIBITION.

The following is a list of the articles on exhibition with names of exhibitors.

P. A. JEWELL.

Crabs.

Orange.	Alkens Striped Winter.
Malden's Blush.	Quaker Beauty.
Beecher's Sweet.	Minnesota.
Hutchinson's Sweet.	Unnamed variety.

Apples.

Unnamed variety.

E. WILCOX.

Apples.

Talman's Sweet.	Golden Russet.
Utter's Large Red.	Sweet Pear.
Plumb's Cider.	Willow Twig.
Haas.	Rawle's Janet.
Perry Russet.	Ben Davis.
Fameuse.	Three Unnamed Seedlings.

Crabs.

Aiken's Striped Winter.	Hyslop.
Maiden's Blush.	

Canned Fruit.

Aiken's Striped Winter Crab.	Lady Crab.
Wilcox's Seedling Crab.	Hyslop Crab.
Maiden's Blush Crab.	Fall Stripe Crab.

A. G. TUTTLE.

Apples.

Walbridge.	Red Reinette.
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JOHN HART.

Apples.

Limber Twig.	Saxton.
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Potatoes.

Snowflake.

W. K. BATES.

Apples.

Lucy.	White Winter Sweet.
Seek-no-Further.	Worthington.
Talman's Sweet.	Ben Davis.
Fameuse.	Two Unnamed Seedlings.

NORMAN BUCK.

Apples.

Blushing Lady.	Baldwin Sweet.
Talman's Sweet.	Groesbeck Russet.
Strawberry.	

ANNUAL REPORT.

JAMES HARTWIG.

Apples.

Utter's Large Red.	Golden Russet.
Talman's Sweet.	Red Romanite.
Sweet Pear.	Rawles' Janet.
Pound Sweet.	

A. W. SIAS.

Apples.

Rollins' Pippin.	Elgin Beauty.
Rollins' Prolific.	Melinda.
Wabasha.	Phoenix.
Bethel.	

Crabs.

Fameuse, (Winter.)	Meador's Winter.
Hyslop.	Soulard.

P. P. OLMSTEAD, MONONA, IOWA.

Apples.

Two unnamed Seedlings.

WYMAN ELLIOT.

Honey Sweet Crab.	Red Currant Wine.
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MICHAEL KNAPP.

Grapes.

Delaware.	Concord.
Diana.	Iona.
Eumelan.	

TRUMAN M. SMITH.

Apple Jelly.	Crab-Apple Cider.
Cider Vinegar.	8XXX Port Wine.
Delaware Grape Wine, '72 and '74.	Old Sherry.

I. W. ROLLINS.

Apples.

Melinda.	Sweet Russet.
Bethel.	Oscalooza.

A. J. PHILLIPS.

Unnamed Seedling Winter Apple.

GEO. W. CLARK.

Apples.

Perry Russet.
Golden Russet.
Blush Russet.
Fameuse.
Roman Beauty.

Utter's Red.
Haas.
Keswick.
Rawle's Janet.

W. T. SCOTT, STATE AGRICULTURAL COLLEGE.

Two specimens Evergreen Sweet Corn, illustrating the value of the selection of seed.

Twelve new varieties potatoes, including the following promising ones: Snowflake, Acme, Breeze's No. 6, Extra Early Vermont, Early Ohio, White Blow French, Early Nonsuch, Compton's Surprise, Brownell's Beauty, Excelsior.

Three specimens Early Rose potatoes, illustrating the tendencies of varieties of potatoes to deteriorate and the cause.

APPENDIX A.

OBITUARY—CAPT. WM. PAIST.

Capt. William Paist died near St. Paul, Minnesota, on the morning of October 12th, 1874, in the 50th year of his age. He was born at South Charleston, Ohio, July 31st, 1825. He received a good English education, and at the age of fifteen entered his father's store and was brought up a merchant—following this business in partnership with his brother and engaging extensively in buying wool for an eastern house and packing pork. The firm did a very extensive business, and had unlimited bank credit at Springfield. Heavy losses finally impaired Mr. Paist's capital, and in 1855, he removed to St. Paul and embarked with enthusiasm in the purchase and sale of real estate, making money until the crisis of 1857. The storm which levelled so many fortunes to the ground did not spare Mr. Paist. Unable to realize upon his extensive purchases of real estate, almost everything was swept away, and he became a poor man. He struggled manfully for a living with varying success, until 1862, when he joined the army—enlisting as a private in company K, of the 8th regiment of Minnesota Volunteers. He was soon promoted to a Lieutenantancy, and accompanied his regiment, commanding his company, on the expedition led by Gen. Sully against the Indians on the Minnesota frontier. He was afterwards promoted to the Captaincy, and served with his regiment until the end of the war. At the battle of Murfreesboro, he was wounded by a spent ball which knocked him senseless. It was intercepted by the brass buckle on his belt, which alone probably saved his life. Colonel Rogers, supposing him dead or mortally wounded, ordered him carried back to camp. But he revived sufficiently to hear the order and rousing up asked, "Colonel, does it make any difference whether I go back or forward?" "Not a bit," said the Colonel. "Then I will go on with my men," replied Mr. Paist, and so he did. He joined Sherman's command and participated in his triumphant march to the sea. His unpretending modesty, kindness of heart and manner, genial social qualities and manly courage made him a great favorite with his men who would do almost anything for him.

The writer saw him when he returned with his company, covered with dust, and was welcomed back at the Capitol in St. Paul. He wore none of the insignia of his rank and could not be distinguished from the humblest man in his company, which caused a friend to remark, "Bill, you don't put on much style." This was true of him on

all occasions. His only style was the style of good fellowship and kindness.

Quitting the army with an honorable record, he purchased a small farm in the vicinity of St. Paul and embarked quite extensively in the dairy business.

He was one of the 12 or 15 original Grangers who organized the North Star Grange of Patrons of Husbandry, the first in the State, and probably the first in the United States. He was elected Secretary of the State Grange, serving the first two years without pay, and afterwards was repeatedly re-elected, holding the office until the day of his death. He was also elected Secretary of the State Agricultural Society in 1872, re-elected in 1873, and again re-elected in 1874, holding this position also until he died.

In 1873 he was Chairman of the State Central Committee of the opposition or Grange element which held a political State Convention in September, at Owatonna.

For some years prior to his death Capt. Paist's health was feeble. His disease was consumption, contracted during the hardships and exposures of the war. But his energy and indomitable spirit would not succumb. He would ride to his office in the city and personally supervise the important correspondence and other business connected with the State Fair, when unable to set up and while occupying a bed in his office. But he finally yielded when literally worn out, and on the 12th of October the fading leaves of autumn gave the signal for his departure and he quietly expired at his home in the presence of his faithful wife and affectionate children, universally lamented by his acquaintances and friends and without an enemy in the world. The large funeral procession which followed his remains to the tomb on an inclement autumn day attested the respect and esteem in which he was held, and evinced the faculty in which he excelled many abler men—that of attaching to himself the warm sympathies of a multitude of friends. His heart was as guileless as that of a child and his life illustrated that—

“The brave are the tenderest—
The loving are the darling.”

APPENDIX B.

REPORTS OF MEMBERS OF GENERAL FRUIT COMMITTEE, PREPARED FOR, BUT NOT PRESENTED AT, THE SUMMER MEETING, JUNE 30TH, 1875.

SMALL FRUITS.

REPORT OF WYMAN ELLIOT, OF MINNEAPOLIS.

The subject of small fruits has heretofore received too little attention in our discussions, but at the present time is very appropriately placed on our programme, and I hope may receive such notice as it deserves. We, as a Society, in seeking to grapple with the all-absorbing topic of large fruit, as the apple and pear, have neglected to pay the notice due the strawberry, raspberry, currant, cranberry and native plum. The small fruits of our State are quite a source of revenue to our pioneer settlers, growing wild very abundantly in many localities, and being available to nearly all living in small towns and cities along our railroads.

The cranberry in early Territorial days was considered free plunder, but now a good cranberry marsh is thought to be a profitable possession, and lands that a few years ago were looked upon as worthless, are being improved. and soon will be our most productive and profitable. Among these are many fine locations in our State for cranberry growing, and all wanted to develop them is a little Yankee ingenuity and Western enterprise. The area used for cranberry culture is added to each year, and in a few years such lands will become very valuable.

The blueberry will before long be added to our list of cultivated fruits, and we shall doubtless see many new and improved varieties. as we have already of the raspberry and other fruits.

Practical experience is what we need. Heretofore we have been experimenting singly, and have made no note of what we have learned. Each one learning something new for himself without in any way benefiting his brother horticulturist, consequently we have

all traveled the same road of bitter experience, when if we had communicated more freely with each other we might have shunned some of the failures; but now that we have an agricultural farm, and a live Professor at its head, we shall be looking in that direction for examples of practical horticulture. It has been the fortune of most of us to have experimented unsuccessfully with some of the small fruits, but our failures give many of us our best experiences.

Since the blight has thrown a shadow over our hopes of profit from the apple, we should strive to make up in small fruits what we lack in the larger. We may safely enlarge our strawberry, currant and raspberr. patches without fear of overstocking the market, and we may yet regain the reputation of being a first-class fruit State.

Truly, the experience of the past two years has not been flattering, but we may derive some comfort from the fact that, while we, in cold Minnesota, have been scorched, they, six hundred miles south, have some of them been burned.

To arrive at the area covered with small fruits, in our county, is no easy task, but I should say we have, of the different varieties, as follows: Strawberries, fifty to seventy-five acres; black and red raspberries, fifteen acres; currants, fifty acres; cranberries, two hundred acres.

The prospects of a full crop of small fruits are equal to many of the past years. Strawberries are one-half to two-thirds of a crop, late rains having swelled the fruit *set* to a good size. Many of the blossoms blighted, from some cause unknown. Plants wintered passably well.

Currants will yield about two-thirds of a crop, the few berries setting being a good size, but bunches short. The crop of raspberries is not more than one-third of the usual amount, caused by the killing back of the canes by the extreme cold of the past winter. Plums promise to yield abundantly, having set very full. The little curculio is at work, leaving his crescent-shaped mark to let people know that the hard times did not disturb his repose.

The currant, by some, is considered the most valuable of all our fruits being used in the many forms. When green it is most excellent for sauce, pies, tarts, and canned for winter use. When ripe the wines, jams and jellies made from it help to fill the larder of every well regulated housekeeper. In its season it is used very much as a table fruit, being very healthful. The old Red Dutch is first for profit and quality.

White grape next. The rest are fancy varieties for professional nurserymen to make money from.

The soil in which I have cultivated currants has not been the best adapted to developing the largest returns, but it is such as a large majority of our horticulturists have to deal with—sandy prairie. I usually propagate by cuttings taken the latter part of September or first of October and planted in rows two feet apart and six or eight inches in the row; setting top of cutting even with the top of the ground, then by turning a furrow with a light plow on the row they are prepared for winter. After the frosty nights in the spring are passed, the ridge is raked off, leaving the top of the cutting even with the surface; cultivating clean, we are reward-

ed in the fall by fine, healthy canes. Remove every alternate row, and if the bushes in the row remaining are too thick, thin; then leave for fruiting.

Currants are usually three or four years old before bearing a full crop, and in our light soil bear but three or four good crops before beginning to decay. The past two years the currant worm and borer have made sad havoc with our bushes, but at the present time I see signs of coming off victorious with the help of Paris green and hellbore, either of which are sure exterminators of the larva of these pestiferous insects. I usually hire children to pick the fruit, paying one and one and a half to two cents a quart, using tickets as tallies, and each night taking tickets and paying for them. The most satisfactory way of selling is by weight; as, if I market currants by the bushel before the stems wilt, the purchaser, after keeping 24 or 48 hours, is obliged to resort to wine measure to sell the number of quarts bought; but by weight, every one gets proper quantity. A bushel of good plump currants weighs forty pounds.

I would like to have pruning of the bushes discussed at the next winter meeting. Some recommend tree form, single stem; others the bush, six or eight canes to a bush, some shortening of tops, others cutting out old wood each year, some spring, some fall pruning. All have their advocates; but which is best, or is there no choice between them?

Manuring, cultivating and mulching are recommended; clean cultivation has always proved most satisfactory to me—mulching with manure in the fall pays extremely well, as soil cannot be too rich for currants.

Gooseberries with me are not and have not been a success, as far as fruit is concerned, being, like the currant, subject to the gooseberry or currant worm, which eats the leaves and stems off the fruit and soon kills the bud. The same remedies are recommended as for the currant. Gooseberries are not as easily picked as other small fruit, on account of (as the children express it) the pricklers, and as a paying crop are a failure; yet I think a few gooseberries should have a place in every collection of fruit.

Strawberries, the queen of small fruits, as far as pleasure and profit are concerned, are very much sought after in their season, by both rich and poor, adorning with no better grace the sumptuously spread table of the rich than the plain unostentatious board of the working man; possessing no more delicious flavor for the rich man's lordly palate than for the undefiled taste of the humble mechanic. They are the people's choice of the small fruits, easily cultivated by amateur as well as professional gardeners. They should have a place in every garden. A small patch well tended gives a family a delicacy fit for the highest in station.

The strawberry is a native, growing luxuriantly and producing fine fruit in many localities. The Wilson Albany Seedling is generally conceded to be most productive and most successfully cultivated in all locations. In place of irrigating strawberries in fruit, mulching between the hill and rows with meadow grass or clean straw is very beneficial. I have used straw, hay, leaves and sawdust as coverings for winter protection. Hay is the best, leaves

next, and straw, if free from foul seed, is very good. Many make sad mistakes in removing the covering from their strawberry beds before the frosty nights are over. There is usually no danger of smothering the plants if care be taken to lighten the covering after the snow is off. Our fruit-raisers cultivate very little in hills, preferring to let the vines run and form beds two or three feet wide. Vines are worth very little after the third year.

The raspberry is one of our most wholesome and desirable fruits. It succeeds the strawberry in season, and if grown properly is thought by some to excel it in flavor and deliciousness. Our Red and Black, as found in their native haunts, growing in the shade of the lofty maples and hickory, possess rare delicacy unrivaled by our cultivated sorts. Moist, cool locations, with northern exposures, are preferable. Doubtless many of you have seen in your wanderings localities where the wild raspberry grows luxuriantly. Such situations are well adapted to the growth of cultivated varieties. The severity of the past two winters has proved most disastrous to the raspberry, in many instances killing the canes nearly to the ground. (The best method of protection is one of the subjects needing our attention.) Many of the finer varieties, protect them ever so well, are too tender for this climate.

Raspberries are sometimes quite remunerative, giving returns of from three to six hundred dollars per acre. The bushes are not so subject to the depredations of insects as many other of our small fruits. The small borer that assails them near the root is easily destroyed by the free use of wood ashes. Doolittle and Seneca are leading varieties. Red Philadelphia for hardiness and productiveness stands first, quality of fruit is not equal to some of the new sorts.

Mulching has a tendency to increase productiveness and flavor of fruit.

I hope in the future we may be able to devote more time and attention to the nature and cultivation of small fruits. For from these are, to some, the profits of fruit raising in the State.

Query—Is the tomato a small fruit or a vegetable?

Respectfully yours,

WYMAN ELLIOT.

REPORT OF J. I. SALTER, OF ST. CLOUD.

St. Cloud, Minn.. June 21st, 1875.

Mr. C. Y. Lacy:

SIR:—Your favor of the 5th inst. was duly received, and in compliance with your request, I herewith return to you a very imperfect report of the condition of fruit in my vicinity. Owing to the backwardness of the spring, rendering the early preparation of the soil for the reception of the different seeds inexpedient, and in some

instances impossible, I have been so driven by my work that I have scarcely known the condition of my nearest neighbor's plants, shrubs, fruit trees, &c.; but since the receipt of your note I have taken some pains to ascertain the present prospect for a crop of Russian apples, raspberries, blackberries and strawberries, also the condition they were left in at the beginning of warm weather. The "Dutchess of Oldenburg" has stood the past winter in timbered land, in many instances very well; "Ben Davis" killed entirely with some, while with others it withstood the severe cold better than the "Duchess," and this without any apparent cause; on the open prairie they are both ruined, or nearly so. Transcendent and Hyslop Crahs have stood alike on plain and timbered land well, none being killed by cold so far as I can learn. The borer has, however, destroyed many trees.

Raspberries have been, where not protected, somewhat injured, especially the more tender varieties. Philadelphia and Brinckle's Orange badly killed. Except in some instances where ample and judicious protection has been given, not more than one-fourth, or at most one-half crop can be expected from those varieties. "Mammoth Cluster" and "Doolittle" will give from three-quarters to a full average crop, depending on past care and location. The varieties cultivated are generally the Blackcaps; the other varieties but sparingly, Philadelphia leading all others except Black Caps. As far as diseases, there does not seem to be any as yet developed. Insect enemies, but few and not yet very troublesome. The "Raspberry Maggot," and a small white worm that sometimes (but seldom) destroys the roots of new canes, being all worthy of mention. Ordinary care and cultivation, together with proper manuring, will be almost certain to give fine returns. Blackberries "Nix," all killed; same way every winter. The past winter killed nearly all the wild canes to the ground. The varieties tried here so far have been the Kittatinny and Wilson. I have been experimenting with a wild variety for the past five years, and supposed my labors crowned with success, when the past winter came and destroyed my triumph; still, I think success with us, in the blackberry line, must be found, if found at all, among the wild sorts.

Strawberries: All the varieties where not protected, have suffered somewhat; Wilsons the least of any—some beds of the Wilson passing through the winter without the least protection, and coming out this spring in brilliant style, scarcely a plant injured. "Wilson's Albany" is the variety principally grown, although "Jucunda," "Triomphe de Gand," "Charles Downing," "Hovey's Seedling" and "Mexican Everbearing," with many other varieties, are grown to some extent. "Hovey's Seedling" has heretofore been the standard sort raised for family use, but it is rapidly being displaced by the "Wilson." The "Triomphe de Gand" and "Jucunda," the former especially, seem to require a heavier soil, and more particular attention, than the "Wilson," and as a consequence are not so extensively grown by farmers, and others not making horticulture a specialty. The prospect is good for a fair crop of this most delicate of all small fruits, but scarcely a full crop. As far as my own experience goes, and from what information

growers of the fruit have given me, there seems to be almost entire freedom from disease, from the depredations of insects of this plant as yet. A few years since it was the exception to find a small bed of strawberries for the use of the family, in the farmer's garden; and when found the variety was almost surely "Hovey's Seedling," or else a variety—the name unknown to me—that was prolific in nothing but foliage. Now, however, the case is quite reversed, and almost every farmer's table is graced with luscious strawberries and sweet cream in the season. Being sorry that I cannot make my report more instructive and full, and wishing the best success to the Minnesota State Horticultural Society and its officers,

I remain very truly yours,

J. I. SALTER.

REPORT OF J. S. HARRIS, OF LA CRESCENT.

The extent of small fruits under cultivation is diminished somewhat, owing to the combined injuries of insects and of the hard winter of two years ago. Hardly enough are now grown for home use. Grapes, however, constitute an exception. These are recovering their lost favor with fruit growers.

Among insect injuries may be mentioned those of a white grub working at the roots of strawberries. The chinch bug is also sapping the stems of plants set last Fall. The currant borer is working on the bushes, but the currant worm is unknown. Grapes have at present no insect enemy.

The strawberry most extensively cultivated is the Wilson and the Green Prolific next. Currants are mostly Red and White Dutch

The raspberries are Black Caps and Natives. The Grapes are chiefly Concord, Clinton and Delaware, the Isabella discarded. The vineyards are somewhat extensive. The cultivation of strawberries in single rows is abandoned.

The blight is prevailing fearfully on the Transcendent and some other crabs, Talman's Sweet and St. Lawrence.

REPORT OF W. K. BATES, OF THE STATE HORTICULTURAL SOCIETY.

STOCKTON, MINN., June 26, 1875.

C. Y. Lacy, Sec. of Minnesota State Horticultural Society:

Yours, with notice of appointment to report to Society was received. In reply would say, as I cannot attend your meeting the 30th ult. I will send a small report.

So far as my personal knowledge goes, we shall not have a very large crop of apples. The orchards in our section wintered nicely,

and are doing finely this summer. I have not seen or heard of a case of blight this summer, the cold, backward season being the cause I think. Take a very wet, warm spell in summer and the blight developes rapidly.

Of insects I would say that I sold my neighbor a lot of trees, which after being set out started nicely until last week he noticed they showed such a lot of dead leaves and limbs that they must be dying, so he called my attention to it, and we gave the orchard a critical examination, but could not find anything until about the last tree, on which we found a large green beetle, (similar to the one spoken of on page 119, Report 1866-73, of S. H. Society,) eating away on the underside of a limb in a bud. The habit of this insect is to eat only at the base of the bud, and does not eat the leaf. The insect, on being found, drops to the ground as if it were dead, like the Colorado potato bug.

Of small fruits I can say that the prospects are good for a large crop. Mr. H. B. Waterman, Harvey Pike, Mrs. S. Pike and O. M. Lord, of Minnesota City, in this county, are large growers of raspberries. They prefer Doolittle's Blackcap to any other for profit, as it is very hardy; they are trying Davison's Thornless for early. The Mammoth Cluster is very large and nice, but winter kills some winters. I have tried all the above and like them. Mr. Eckerts, near Winona, likes the Seneca Blackcap best. The best way to train the raspberry is to prune them back when they attain to two and a half or three feet in height. This makes the plant throw out a large lot of short limbs which give a large crop the next season and does away with the trellis.

Of strawberries, Mr. John Hart, of this place, is the largest grower. His main plant is the Wilson Albany. He has a fine lot of strawberry seedlings of his own raising, some of them very promising. My own experience has been with the Welcome, (very early,) Agriculturist, Wilson's Albany and Welcome, best culture being the bed system kept free of weeds; mulch in winter with chaff. From what little I have seen of the Prouty Seedling Strawberry I think it best of all. The Kent is best to stand weeds and grass, the Albany the poorest. The Emperor, Banus Mammoth, Leming's White, and Nicanor proved worthless; the Colfax is a very sour berry, rather small but a very heavy bearer.

Of currants we find that the Black Naples, Red Dutch and White Grape are the best. Set plants 4x4 or 5 feet and mulch heavy with manure every spring and we have good crops of nice fruit,—and this applies to the gooseberry as well. I only have the Houghton which does not mildew.

Hoping you may have a good meeting, I remain yours.

W. K. BATES.

FRUIT CULTURE IN MINNESOTA.

WORTHINGTON, Minn., June 29, 1875.

Prof. C. Y. Lacy:

This is a new county, settled principally by the National Colony about three years since—consequently very little has been done in fruit culture thus far. Mr. Chas. Plumb, Mr. Boweman, Dr. E. Bedford and Mr. G. J. Hoffman are the men in this vicinity who are giving most attention to fruit. Mr. Hoffman's report, which I enclose herewith, will speak for itself. It embraces more valuable information than I could obtain from all other sources. Regretting that I cannot meet with you to-morrow, and hoping that you may have a pleasant and profitable meeting, I am

Truly yours,

R. F. HUMISTON.

REPORT OF G. J. HOFFMAN, OF WORTHINGTON.

In the following list the varieties are numbered according to hardiness 1, 2, 3, &c., 1 being the hardiest.

Apples.

Duchess.....	1
Tetofsky.....	1
Ben Davis.....	2
Fall Stripe.....	2
Utters.....	3
Plumb's Cider.....	2
Golden Russet.....	2
Sops of Wine.....	3
St. Lawrence.....	3
Rawles' Janet.....	3
Red June.....	4
Early Joe.....	4
Perry Russet.....	3
Winter Winesap.....	4
Walbridge.....	3
Pewaukee.....	4

Siberians and Hybrids.

Transcendent.....	1
Small Red Crab.....	1
Large Red Crab.....	1

Winooqui.....	1
Oak Hill.....	2
Homestead.....	1
Pember.....	3
Winter Green.....	3
Lake.....	1
Marengo.....	2
Chicago.....	2
Coral.....	2
Kishwaukee.....	2
Gem.....	4
Brier's Sweet Crab.....	2
Glover's Early.....	3
Golden Sweet.....	1

Raspberries.

Mammoth Cluster.
 Purple Cane.
 Doolittle Blackcap.
 Seneca.
 Philadelphia, (stood the winter best.)

Strawberries.

Wilson's Albany.
 Ida.
 Downer's prolific.
 Green.
 French.
 Michigan Seedling.
 Nicanor.
 Charles Downing.
 Kentucky.
 Col. Cheney.

Have fruited Wilson and Ida. Sometimes Wilson does best and sometimes the Ida.

Currants.

Red Dutch.
 Cherry.
 White Dutch.
 White Grape.
 Cherry and White Grape doing poorly because of too much wind.

Grapes.

Concord.
 Clinton.
 Delaware.
 Doing well and are easy to protect.

Cherries.

Early Richmond.
 Common Morrello.
 English Morrello.
 Seedlings from Early Richmond.
 All damaged somewhat last winter.

Plums.

Natives.
 All wintered well.

Set most of the trees in the spring of 1873. Have about 400 trees set 12 feet by 16. Cultivated with corn the first two seasons. Have now seeded down every other space, while the others are devoted to small fruits; have a northern slope. All trees damaged more or less last winter, except crabs. Duchess and Tetofsky lost a few buds. Set six pear trees, which are mostly dead.

G. J. HOFFMAN.

Worthington, Nobles County, Minnesota.

REPORT OF O. D. STORRS, WINSTED LAKE.

WINSTED LAKE, MINN., June 12th, 1875.

Mr. C. Y. Lacy:

DEAR SIR:—In compliance with your request and notice of my appointment as member of State Horticultural Society, I append the following report of the condition of fruit trees and small fruits.

Standard Apples.

The varieties that have passed through the last winter uninjured are the Hebron, Tetofsky and Stewart's Sweet.

Second Hardy.

Winsted Pippin killed back 4 to 6 inches; Wealthy, 2, 3 and 4 years old, 4 to 8 inches; Russian August, 5 years old, 4 to 6 inches; Morrison's Treasure, 3 years old, 8 to 12 inches, and badly sunburnt on southwest side; Duchess killed back 6 to 8 inches and the wood is black, and some of the best 6 and 7 year Duchess are dry-

ing up and will die during the summer. Haas killed back 6 to 8 inches, and 2 out of 10 are dead, 5 years old. Fameuse nearly all dead, they leaved out and in a few days the leaves dried up, the wood is black down to the snow line. Saxton—some are dead and others in same row but little injured.

The varieties that winter killed are Pewaukee, Walbridge, Mollie, Bellflower, and Black Vendevere. These were 3 and 4 years old. I reset with hardy trees.

I have 22 varieties of crabs, all came through the winter in good condition except the Soulard. I have discarded that entirely.

I have from 250 to 300 Seedlings from 1 to 4 years old, and only four have come through without any injury, two of these are from seed of the Duchess apple 3 years old, one of the other 4 are from Transcendent seed, the other from a large Minnesota grown apple. I am experimenting with Seedlings from Minnesota fruit, as I believe our horticultural success depends upon our efforts to grow trees from seed.

Plums.

The Miner plum, 5 years old, have come through with from 1 to 2 inches of tips killed—blossomed and a good prospect for a fair crop; Miner, 1 and 2 years old, killed 4 to 6 inches. I don't consider the Miner plum a *sell* at all, but far superior to our best native plums. Richland Purple killed to the ground, 4 years old.

Carnation cherry, 5 years old. This hardy cherry passed through the winter wholly uninjured—not a bud hurt—prospect for a light crop of fruit. I have an orchard of about 350 trees and about 30 different varieties. Soil, heavy clay, north slope, no protection.

Small Fruit.

Grapes came through all right when covered. I have only two varieties—Moffets and Concord.

Currants, gooseberries, raspberries, strawberries, are doing well, prospects for a crop, good.

The area of small fruit in this locality is small. Farmers do not seem to appreciate the value of small fruit sufficiently to cultivate to any extent.

I am pleased to hear that the subject of discussion at your summer meeting is on small fruit, and hope many will profit thereby, and wake up to the interest of cultivating more small fruit in Minnesota.

The mode of cultivating fruit trees in general is to plant the ground with some hoed crop, corn generally. I have noticed several orchards that have been let grow up to grass with only mulching around the roots and are doing well.

Diseases.

None except winter-killing and sun burning or bark blistering on

the south side. Cause—hot spring sun. I have never had a tree fireblight yet, and only know of one orchard within ten miles that had a few Transcendent stock with fireblight last summer, 1874.

The only insects that are injurious to fruit trees are worms of two varieties, green and brown, that unless hunted off and killed will eat the leaves entirely off.

Plum trees are infested with caterpillars that make large webs or nests in the branches. The best remedy I have found for destroying them is to smoke them with tobacco. Put tobacco leaves in an old pan with fire in and hold it under their nests and it is sure death and does not injure the tree or fruit.

I have visited the principle orchards within ten miles around and find the prospect for fruit is good. Currants full crop, gooseberries and raspberries are well loaded with fruit. Grapes, but few are in bearing.

REPORT OF L. D. MILLS, GARDEN CITY, BLUE EARTH COUNTY.

JUNE 28th, 1875.

C. Y. Lacy:

DEAR SIR:—Yours of May 29th received, informing me of my appointment as member of General Fruit Committee of Minnesota State Horticultural Society. Cannot send a report that will be of much interest, except, perhaps about grasshoppers, and the extent to which they have damaged small fruits, as you say, small fruits are the principal subjects of discussion for the meeting of June 30th.

Currant bushes are nearly stripped of both foliage and fruit. Hoppers eat off the stem of fruit, allowing it to drop; also eat some of the fruit.

Gooseberries eaten some, but not as bad as currants.

Strawberries, foliage not eaten much; fruit about one-third eaten.

Raspberries, foliage nearly all eaten, and fruit damaged to a considerable extent, but if hoppers emigrate soon (which they probably will) there will be half or two-thirds of a crop.

Wilson's Albany is the most successful strawberry cultivated here, and about the only one that is grown to much extent. Of raspberries, the Doolittle, Black-cap and Philadelphia are the ones mostly cultivated, as they are the most successful. Houghton Seedling Gooseberry is the only one grown here. It is very prolific, and is grown with good success.

Grapes do well where proper care is given them, but are not very extensively cultivated in my immediate locality. Mr. Kenworthy,

of Rapidan, raises quite a quantity each year. He is, I think, very successful with them. Am not much acquainted with the varieties he grows.

These varieties of fruits named are not troubled much by insects or diseases.

Hoping that some portions of this may prove interesting, if not instructive, I am

Yours truly,

L. D. MILLS.

APPENDIX C.

REPORTS, PAPERS AND ESSAYS PREPARED FOR, BUT NOT PRESENTED AT, THE WINTER MEETING, JANUARY 18TH, 1876.

REPORT OF THE COMMITTEE ON ENTOMOLOGY.

MINNEAPOLIS, Minn., 17th of First Month, 1876.

To the President and Members of the State Horticultural Society :

I exceedingly regret my inability to be present at the winter meeting soon to convene in Winona. And still more do I regret that my time and the state of my health will not permit my preparing a paper upon my favorite subject, entomology, that might be of interest to all horticulturists. In a few words, however, allow me to speak of that insidious little pest, the apple moth, sporting the name "*Carpocapsa Pomonella*," and which belongs to the great order Lepidoptera, and of the tribe Tortricidae. The fact has to be acknowledged that this, the most beautiful moth of the beautiful tribe to which it belongs, is with us in vast numbers, and like many others of the "Insects Injurious," we have to say that their ancestors were imported, and the increase has been rapid; and wherever apple-growing has been attempted, we find the apple-worm pretty generally diffused.

Isaac P. Trimble, the distinguished Entomologist of the American Institute of Horticulture, has devoted much time, patience and labor to consideration of the habits of this moth, whose forewings are of a beautiful ash-gray and brown in wavy alternate streaks, with a large, tawny brown spot, streaked with bright bronze or gold.

In some sections of the United States this insect is two-brooded. I have not carried my investigations sufficiently far to determine whether this is the case or not. I should think, however, that there is but one brood during the season.

From the time the egg is deposited (which is done almost as soon as the apple is formed) in the calyx or snuff-end of the apple, until the larva is full-fed, is about five weeks.

The worm, or caterpillar, when young, is of a whitish color, with a black head and black, shield-like covering on the top of the first segment, but when full grown is changed to a flesh color, or quite pinkish tint, especially on the back, while the head and first segment become more of a brown color.

Each segment has eight little spines, out of which grow very minute hairs. Being now full grown, the worm leaves the apple and selects some crack or crevice, spins its little house, and in three or four days changes to a chrysalis, and in ten weeks comes out the perfect and beautiful moth. Of course the appearance of the moth varies with the latitude and the work it has before it. As it has not been ascertained as whether here the insect is two-brooded, the time that it remains in the chrysalis state cannot be accurately fixed.

There have been many devices used for the destruction of this pest, the most important of which is the band of hay, straw or rags laid in the forks or tied around the limbs and trunks of the trees. It has many natural enemies.

I also desire to call the attention of the Society to the Curculio—or the Little Turk, as State Entomologist of Missouri, C. V. Riley, calls him. From his name, to speak scientifically, *Conotrachelus nenuphar*, you are at liberty to call him Turk or Hottentot, as you like, it will make no difference to him, for he will go for your plums the best he knows how every time.

This insect belongs to the great order Coleoptera, of the tribe Curculionidae, thus showing his name is legion. Should I undertake to tell you of this pestiferous fellow, and you were to allow me the time, there would be no other subject treated of at this meeting. My friend Riley, of whom Missouri should feel proud, gives twenty-four reasons why this apparently insignificant insect "should be dreaded as much as an invasion of Arabs; among which reasons he says the plum curculios are a most unmitigated nuisance, and though a most beautiful object under the microscope, the fruit growers of the United States, if they had their own way about the matter, would wish them swept from off the face of the earth, at the risk even of interfering with the harmony of nature. From one hundred peach trees, Parker Earl captured, in six days, six thousand five hundred curculios."

I will not trespass upon your time by going into the details of the birth, growth, maturity, mischief and death of this insect. Any one, the most casual observer, can see the imago at work with its elephant-shaped nose making the incision crescent-shaped—then *presto* depositing an egg—then *presto* again with its snout pushing the egg quite under the skin—and gluing up the wound—then off for the next plum, &c., &c.

From the egg thus carefully stowed away under the cuticle of the plum, there soon hatches out a little grub or maggot, which works around and around, when, in course of time, he growing all the while, and the fruit growing also, the mischief is done, the fruit falls to the ground, and in due time, being full fed, the larva leaves the plum and makes its way into the ground, changes his personal appearance very much, and during the next June is ready to commence operations again. And here I agree with Prof. Riley, that the plum

curculio is single-brooded. I do not know how many species there are of this insect, but they are certainly numerous. I have observed with much interest one in particular that preys upon the leaves of our common white elm. I should not say upon the leaves, but between their surfaces, in such a manner as to make the leaf to wear the appearance on portions of its surface like the combs of the chicken cock. The most effectual remedy against the curculio is the jarring process. Eternal vigilance is the price of good plums, and upon the first appearance of the crescent mark get a sheet and spread under the tree, and with a board and mallet jar the tree; the Little Turk falls off and is easily captured, for he packs his trunk and would fain make you believe he is a dead plum bud. That the tree may not be injured by the jarring, it is better to saw off one of the lower limbs, leaving a short stub to strike on.

The next insect that I shall bring to your notice is the *Bostrichus* (*Amphicerous*) *bicaudatus*—order Coleoptera, Family Ptinidae—or apple twig borer, which many of you, no doubt, have observed, very much to your disgust.

It is a very common insect, and is a dark brown beetle, not more than two-fifths of an inch long; the thorax is rounded and rough, punctured—and especially is this the case toward the front, where there are many rasp-like prominences. It is almost a cylindrical beetle, the thorax so covering the head as to be scarcely discernible, and the elytra so completely overlapping the abdomen as almost to conceal it, and terminating with (especially in the male) two little horns, from which this insect received its specific name, *bicaudatus*—*two-tailed*. In its larval state this insect is entirely unknown; observations, however, are being made with a view to ascertain its metamorphoses. You are all familiar with its work, and I need not now claim your attention further on its mode of operations.

The best method of destroying it is to watch for its presence, and with a wire inserted in the passages, crush them; or cut the infested branches off and burn them. I will mention one thing more. Dr. Le Baron, of Illinois, says that all the larva of the genus *Bostrichus* are genuine wood-borers—and this may be—but this *bicaudatus* eats through the bud into the pith, and this in its imago state.

An insect somewhat similar is often injurious to the grape vine—not so long, is not *bicaudatus*, though it has the rough thorax and imbedded head. There is certainly no one ignorant of the fact that during its season we have the squash bug, *Coreus tristis*, but amateurs must not confound this insect, which is of a dirty brown color on its upper surface, and of a dirty yellow ochre color beneath, with the striped cucumber beetle, which belongs to the sub-family, *Galerucidae* species, *Diabrotica vittata*. Insects belonging to this sub-family are for the most part distinguished by the nearness with which their antennæ approach each other at the point of insertion, often being as near together as the first joint, and the antennæ perfectly filiform, the thorax is not so broad as the elytra, and often, though not always, similarly colored.

The great family *Chrysomelidae*, of which our *Diabrotica vittata* is one species of a sub-family, forms a remarkable exception to in-

jurious insects in general by being most *mischievous* in their perfect state. But the insect under consideration does sometimes do mischief by burrowing into the roots of plants in the larva state, as no doubt many have witnessed—when they have seen a melon or cucumber vine die without any apparent cause.

We also have with us in great abundance Hemiptera Coccidae, or bark lice, etc.

There is, however, an insect, from the mischief it is doing and is likely to do unless some stringent measures are taken to stay its progress, that will force itself *unmistakably* upon the notice of all lovers of sauer kraut and cauliflower—and I refer to the cabbage butterfly—or butterflies, as there are two or three species of them.

But to give a detailed history of them would require all the time allotted to a single paper, and we must leave it for the present.

M.

ORCHARD PROTECTION.

H. M. THOMPSON.

ST. FRANCIS, Milwaukee Co., Wis.

The observations and experiments of horticulturists in the West and Northwest, covering the period of one generation, have most conclusively demonstrated that, owing to the peculiar climatic conditions prevailing over a large extent of country, the difficulties encountered in growing fruits for family and for market use, have been and are now so great as to discourage, to a considerable extent, the acreage of tree and small fruit planting necessary to supply the demand, which must keep pace with the increase of wealth and population; hence the importance of inquiring into the causes of failure and the general adoption by fruit growers of such preventative measures as are most likely to mitigate, if not to entirely avoid in the future, the disastrous results which have occurred in the past.

The experiments made in testing the standard varieties which originated in the Eastern, Middle and Southern States, have proved that the most of these varieties possess certain peculiar, undefined, constitutional characteristics in the composition and structure, which renders their existence precarious, when planted in localities containing different soils, and subjected to climatic conditions, entirely the reverse of the conditions to which those varieties were subjected in their origin; the Baldwin, Spitzenberg, and R. I. Greening may be cited as instances of proof.

On the other hand it has been ascertained by experiment, that certain varieties of apple trees which originated in localities, in which the various conditions of soil and climate were similar to the conditions prevailing in the locality to which they have been remov-

ed, do not appear to suffer by removal. As instances in confirmation of this view may be cited the introduction of the Fameuse from Canada, Red Astrachan, Duchess, Alexander, and the Currant crab from Northern and Northeastern Europe. The discovery of these important facts may be considered as the first tending to the discovery of other important facts necessary for the advancement and success of horticulture in the Northwest.

Horticulturists having ascertained one of the causes of failure, are led to the inevitable conclusion, that other causes of failure must also exist, the most prominent of which are believed to be frequent and sudden alternation of freezing and thawing, when the ground is surcharged with moisture, causing the separation of the bark from the wood structure of the roots, or the disruption of imperfect cellular formation in the roots, in consequence of late and unperfected autumn wood growth; or the cellular formation, be the same perfect or imperfect, may be injured by the sudden withdrawal of frost in early winter, mid winter, or early spring, when the earth is devoid of moisture; in this instance the interstices existing in the soil about the roots being filled with air, the withdrawal of frost has the same tendency to injure the cellular formation, as would result if the roots were above ground at the time of the withdrawal of frost. Injury may also result from an excess of exhalation of moisture, induced by cold, dry winds, when the extremities of the roots of the trees are encased in frost. Or strong winds may sway small trees from an upright position, and thereby produce a cavity in the soil at and below the collar of the tree, liable to be filled with water by rain fall. Subsequent lowering of temperature cause congelation and expansion and thereby burst the bark at or below the collar. Injuries also result from the active circulation of sap in the south and southwest portions of the stem of the tree, induced by the absorption of heat from the sun's rays, and the arrest of circulation and expansion of sap, and rupture of the cells in consequence of congelation by subsequent freezing.

Having ascertained and enumerated some of the causes which produce disastrous and often fatal results to vegetable life, we may take into consideration propositions of what will probably be the most appropriate, effective and practical means for adoption as a preventative against the recurrence of the many causes that have produced such disastrous results. And as a combination of causes seem to produce results that have a tendency to impair vegetable life, it is also to be presumed that a combination of preventative measures are required to counteract or obviate the causes that result in injury. Hence the following propositions are adduced:

- 1st. The introduction of varieties originated in similar soils and subjected to similar climatic conditions prevailing in the locality in which they are to be planted.
- 2d. Originating varieties adapted to our climatic conditions, by repeated reproduction from seed.
- 3d. Originating varieties by hybridizing, using the Siberian Crab and some of the best and most promising varieties of apples as parents.
- 4th. Winter mulching.
- 5th. Amelioration of the severity of climatic influences, by the aid of individual, corporate and State efforts, in enlarging the forest area, by forest tree plant-

ing, and the preservation of the natural forest. 6th. The adoption of the plan of protecting orchards and small fruit grounds with a belt of evergreen trees.

In compliance with the conditions in the first proposition may be noticed the introduction of the Red Astrachan, Alexander, Duchess, and the testing of numerous other varieties from similar sources. In complying with the terms of the second proposition, the process of acclimatizing by the process of reproduction is laborious, and considerable time must necessarily elapse before the desirable, legitimate results can be accomplished. In promise of its eventual fulfillment may be cited the production from seed of a number of varieties in Minnesota, Iowa and Wisconsin, possessing considerable constitutional vigor or hardiness, which may serve as the foundation for the reproduction of other varieties possessing still greater inbred constitutional adaptation to the climatic influences with which they have come in contact.

The requisite conditions specified in the third proposition have promise of fulfillment in the past and present efforts of earnest and eminent horticulturists to obtain by hybridizing, varieties of apples, the trees of which will be as hardy as the crab, and the fruit of which shall partake of the size and flavor of the best and most promising varieties of apples now in cultivation.

The requirements of the conditions of the fourth proposition may be fulfilled by the general adoption on the part of orchard growers of the cheap labor system of sowing rye, millet, Hungarian grass or buckwheat in the latter part of the month of July, and allowing it to remain on the ground through the winter, and thereby preventing the alternation of freezing and thawing which has produced so much injury to the roots of trees and small fruits.

In the fifth proposition, for the purpose of modifying temperature, increasing rainfall, and to retard the evaporation of moisture from the soil, and to break the force of winds, efforts should be encouraged for the more general planting of trees in the form of forests and timber belts upon the boundaries of farms, and at least one line of trees upon each side of the line of railways, and two lines of trees upon each side of all public highways.

The sixth proposition requires for its fulfillment the adoption of the plan of enclosing all orchards (which are not favored by natural forest protection,) with belts of evergreen trees; hence it is important that such facts as have a bearing upon the supposed advantage to be derived from such protection should be brought to notice.

It is conceded that "cold air in motion has the property of extracting heat in proportion to its velocity." In illustration of this principle we will suppose that when the mercury in the thermometer is below the freezing point, a person may emerge from a forest or place where the air is not in motion, and enter a treeless plain, or place where the air is in motion at any given velocity, and there is apparently a sudden increase of cold; the apparent lowering of temperature being attributable to the increase of the extraction of heat from the physical system, caused by the moving atmosphere. In this instance there is not only increase of loss of heat by extraction, but there is also an accelerated loss of moisture by exhalation

from the physical system, the proportions of which are in ratio to the degree of cold and the velocity of the wind, and as vegetable life is in many respects partially if not wholly subject to conditions which affect the physical system, it is to be presumed that the velocity of the prevailing winter winds, passing as they do, over a large extent of treeless plains of the northwest, must be very great, and that the extraction of heat and exhalation of moisture from exposed vegetation must be in proportion to the degree of cold, velocity of the wind and the length of time during which those adverse conditions prevail. The effect of these influences upon trees that have made so late a growth in autumn as to leave imperfect cellular formation in the whole or any portion of the trees, in combination with either a very wet or dry soil, may be partially manifested in injury to the imperfectly formed cells of the roots, or the bursting of the bark at or near the collar, or rupture of the inner bark and wood cells of portions of the stems and at the junction of branches with the bodies of the trees, or the injury may be confined to the extremities of the branches, or in extreme cases when subjected to many or all of the conditions adverse to the sustenance of vegetable life, the trees may be injured in every part of their organization. As the longevity of fruit trees is dependent upon the peculiarities of their constitutional organisms, and upon the climatic conditions to which they are subjected, and as the latter conditions are extreme—and as these extreme conditions are violent extremes of cold and heat, and as these extremes are dependent upon the velocity and direction of the wind, and as the coldest and strongest winter winds are from the northwest, and as the thermometer ranges the lowest when the wind is in the northwest and highest when the wind is in a southerly direction, and as the degree of extraction of heat and the volume of exhalation of moisture is greatest when the winter winds are in the northwest, and as the results of these dependent forces are injurious in their effects upon vegetable growth, it is, therefore, to be presumed that the strong winter winds are the principal causes of injury; and that, if by any means orchards can be so protected so as to break or impair the force of the wind, the injuries manifested in orchards will be lessened in like proportion. If this be true, tendervarieties planted and tested in orchards which are to be found located in the heavy timber lands, (some of which have the original forest growth so located as to break the force of the wind upon one or more sides of the orchard,) would undoubtedly afford instances tending to disprove, or substantiate the conclusions herein deduced. The majority of, if not all the intelligent horticulturists of the State concede that many varieties of apple trees are more hardy and productive in the heavy timber counties bordering on the western shore of Lake Michigan, than the same varieties grown in the oak openings, or in the prairie sections. The productiveness of tender as well as hardy varieties in the lake shore timber counties, may be partially attributable to the influence which so large a body of water as Lake Michigan must necessarily exert upon the atmospheric currents in the summer season, but this influence is not as considerable as many might presume, from the fact that the prevailing summer wind is southwest, while in the

winter months the prevailing winds are from the northwest, and when the winds are from the lake to the land, the mercury ranges lower than at stations further inland, and the maximum extremes of cold and heat to which orchards in the lake shore counties are subjected, are greater than in orchards in the interior counties, therefore, it may be concluded that as the winter climatic conditions are so affected by the air currents or proximity to the lake, are more unfavorable to the longevity of fruit trees, in the lake counties, than in the interior counties. Neither can the supposed or real differences be attributed to differences in soil, from the fact that the soil in the timber counties are so variable that soils in various gradations from sand, gravel, and loam to the heaviest clay, are to be found in almost every orchard of considerable size. In all the timber counties that have come under my observation the healthiest and most productive orchards are those that have the original forest growth located upon one or both of the north and west sides; and, as a further evidence of the benefits derived from orchard protection, may be cited the facts that in the early settlement of Milwaukee county, the whole country, extending from the lake to the prairie, was a dense forest, with occasionally a clearing of from two to ten acres. At this time peach trees were planted that came into bearing, and produced so abundantly as to break down many of the trees, and others perished from exhaustion caused by overbearing. Since that time the land has been denuded of timber to such an extent that peach trees cannot be grown except in isolated locations and with some sort of protection.

Having determined some of the causes that have tended to produce injuries to fruit trees, and having adverted to the laudable efforts which have been, and which are now being made, for the introduction of iron-clads, originating hybrids, acclimating varieties by reproduction from seed for the prevention in the future of the wide spread disasters of the past; and having cited circumstances indicating that natural forest protection is beneficial, it remains to be seen what further conjunctive efforts are necessary to assist and forward the steps already taken for the accomplishment of the desirable results in the shortest possible space of time.

As already shown, winter winds is one of the prime causes that has contributed to produce disastrous results, hence orchardists should consider it of the utmost importance to plant belts of trees around their orchards at such a distance apart as will break or impair the force of the winds, and also to plant dense lines of trees in the orchards at distances of not more than one hundred and eighty feet. Evergreen trees are the best adapted for orchard belts and protection lines, from the fact that they retain their foliage through the winter—"Each leaf of the compact foliage tending to obstruct and break the force of the strongest wind." One row of evergreens closely planted will not only cost less but will prove more efficacious for the purpose intended than ten rows of deciduous trees, which have only their naked stems and branches to obstruct the force of the wind. Individual efforts in planting evergreen timber belts for orchard protection, although isolated, will not only prove efficacious for the purpose intended, but will be found to be practical

and effective in producing early satisfactory results, from the fact that the results will enure to the individual planter, and is not dependent upon statutory enactments, or combined public efforts. The attention of orchard planters being called to the necessity of planting evergreen belts for the purpose of preserving the vitality of fruit trees, and for the purpose of preventing the fruit from being blown off the trees, and for the purpose of beautifying the landscape and enhancing the value of real estate will not hesitate to adopt the principle that the planting of an evergreen belt is just as necessary a requisite as the planting of the orchard itself.

Orchard protection being not only *beneficial* is also entirely *practical* from the fact that small evergreen seedlings, suitable for timber belts, and forest tree plantations, are now grown from seed in America (as in Europe) by the million, which can be purchased and planted at so small an outlay of money, that the entire expense need not exceed the cost and labor of planting the fruit trees contained in the orchard.

CRANBERRY CULTIVATION IN RICE COUNTY.

Mr. President, Ladies and Gentlemen :

I am happy to report that after the lapse of many years of talk, essays, and agitations of the cranberry question by our Society and the State at large, a beginning has been made by a few citizens of Rice county, to develop the latent wealth that exists in this natural product of the State. It is estimated that there are in Rice county 800 acres of the natural beds, and about 3,000 acres of marsh which can easily be brought under cultivation. You will undoubtedly remember the prominent notice this subject received in the message of Mr. A. W. McKinstry, when President of this Society, and it is evidently owing to the valuable facts and suggestions given at that time by him that caused an investigation of the subject, and induced others to embark in the business. During the past summer Mr. McKinstry visited the marshes, and I herewith add the result of his observations in the vicinity of our small fruit friend, Seth H. Kenney :

Before leaving the Kenney neighborhood we took the opportunity to visit the cranberry marsh belonging to Messrs. C. Russell, W. A. Shaw and Chas. Lane, which lies a short distance south of Mr. Kenney's. We have long had faith in the possibilities of Minnesota in the way of cranberry culture, and this was greatly strengthened by what we saw here. We found a large marsh as level as a house floor, which had apparently once constituted the bed of a lake, but had been filled up by the gradual accretion of vegetable matter, as the soil is a spongy, fibrous peat, of an indefinite depth, and trembling beneath the tread. Trenches have been cut around the forty acres owned by Messrs. Russell, Shaw and Lane, which take off the surplus water. Two acres of this ground are now cov-

ered with cranberry vines. The history of this patch proves the natural adaptability of our peaty marshes to cranberry culture. About ten years ago, as Mr. Kenney informed us, a few cranberry vines made their appearance at a point in the marsh. The first year that he noticed them, he picked a couple of handfuls of berries from them. The next year they had spread so that he gathered a quart. From year to year the patch has since enlarged, so that it now covers about an acre of ground. The persistence with which the vines encroached upon and routed out the tough marsh grass, afforded the surest evidence that the cranberry is "to the manor born." At the time of our visit the vines were loaded with berries, and as the picking was to commence on Monday, we shall probably be able to report the yield in our next. A house has been purchased adjoining the marsh, and Mr. Lane has moved into it to be able to attend personally to the management of the patch. Last spring Mr. Russell experimented in extending the vines upon the marsh by planting. The runners were cut up in lengths of from four to eight inches and pushed into the soft ground with the end of a board. They have most of them rooted, and have made a growth this season of from four to ten inches, throwing out new roots like a strawberry runner. On some of them were cranberries. That the entire marsh can thus be brought under cultivation we have no doubt.

Another method of propagating, and one that promises to be even more effective, has been tried by Mr. Russell on an acre of marsh lying north of Mr. Kenney's place. In the spring, when about six inches of the surface of the marsh had thawed, while the mud beneath remained frozen so as it would bear the weight of a team, Mr. Russell, using a plow with a sharp coulter, turned over the tough marshward in smooth furrows. Where the furrows lapped, cranberry cuttings were introduced at intervals of about a foot. These have made a nice growth during the season, and having no grass to contend with, will undoubtedly cover the ground in a short time.

So far as we know, Mr. Russell is the pioneer in cranberry cultivation in Minnesota. He has corresponded extensively with cultivators in Wisconsin and New Jersey, and obtained valuable information as to the habits of the cranberry plant. It has but one insect enemy, a worm that sometimes causes serious loss. To counteract this, flowage in the spring is necessary. The marsh of Messrs. Russell, Shaw, and Lane is well situated in this respect, as by raising a dam two feet high at the outlet of the marsh, the entire tract can be flooded. Another drawback upon cranberry cultivation, which cannot be averted except as early ripening is hastened by cultivation, is premature frosts. As to the profit of cranberries, there can be little question. Fifty bushels to the acre are a poor crop, while as many as five hundred bushels have been gathered. At from \$2.50 to \$3 a bushel, this is likely to pay a pretty good interest, and if cranberry growing is profitable at the East, where from \$300 to \$500 per acre are expended in grading and covering the ground with sand, which is considered indispensable, we don't see why it shouldn't pay pretty well here in Minnesota, where so little especial preparation is necessary.

Messrs. Russell and Theopold have purchased one hundred and sixty acres of marsh bordering on French Lake, of which eighty are well situated for cranberry cultivation, being already largely covered with the vines.

O. F. BRAND.

CULTURE AND VARIETIES OF THE POTATO.

Mr. President :

The culture and varieties of the potato is one that much interests me. Of all the vegetables in use the potato should stand at the head of the list. It is food for both man and beast, and has, I think, been grown nearly to perfection. Now, as to the varieties, the Early Rose and Peach Blow seem to be the leading varieties. The Early Rose has been to my knowledge, the most popular early variety, and is, if properly kept, a good winter potato when grown on new land and planted early. I think very much depends upon their being planted early that they may get our June rains, about the time of forming sets, and they continue to grow right along until fully ripe. Whilst late planted ones are quite likely to be checked by the dry hot weather, and scarcely ever mature or give a good crop. I saw an article in the *Prairie Farmer* of December 11th, where R. P. Reed had raised one hundred and fifty bushels from one bushel of the Snowflakes, this is ahead of any yield which I ever obtained from any variety. I would inquire whether any of our members of this Society have tested or know the quality of the Snowflakes. Mr. Reed says they are dry and of rich flavor, and yielded three times as much as the Rose and ripened at the same time. The Early Vermont and Compton's Surprise are gaining in flavor. In planting and cultivating to obtain the greatest yield from a given amount of seed cut to single eyes, plant in rows, two and one half feet apart, the pieces eight to twelve inches apart, one in a place. Plant shallow so the ground will be level after they are covered, and as the potatoes begin to burst through the ground give them a good harrowing with a light harrow. When the tops are three or four inches high give them a good cultivating, and in a week or two go through between the rows with a good horse hoe with double mould boards, which slides the earth under and amongst the vines so completely that no hoeing is required to finish the crop. They should be dug as soon as they are ripe, and before the fall rains. By turning a light furrow away from each side of the row with a small plow the potatoes are easily thrown out over the ground with a good spading fork, they should be allowed to dry a few hours before gathering, and should then be pitted out so no sun nor rain can reach them and so remain as long as safe from frosts. When housed they should be kept from light and air as much as possible.

W. E. BRIMHALL.

THE TRANSCENDENT.

ST. PAUL, Minn., Jan. 15th, 1876.

To the President of Minnesota State Horticultural Society:

I am unable to attend the annual winter meeting this winter, to be held at the city of Winona (which I regret very much,) for I know the Winona people will give you all a welcome and hospitable reception. May they ever be blessed for their generous acts is my hearty wish. Should the Transcendent Crab Apple come up for discussion, I wish to say a few words in its favor. Notwithstanding it does blight in some locations, it is very easily grown, and I say if they kill down, re-plant them again. The blight is claimed to be only a disease, and not likely to last long. I think to-day that the Transcendent is the best thing in the shape of apples for profit that we in this vicinity have. Not that I am propagating them, but for the reason that I get a good crop of them, and they sell more readily than all others. They are good for sauce and pies in August, long before they are ripe, and they last till late in September, and sometimes into October. They make the best of jelly, good for canning, and dried they are the next thing to the unpared peach. They make what my neighbors call good cider, and we have no reason to doubt that it will make good vinegar. I have fifteen acres of them set in an orchard, which netted me thirty dollars per acre, less than one-half of which had been planted only four years, and the balance two years only. The four-year planted trees yielded, or netted fifty dollars per acre, the apples bringing me one dollar per bushel. Why are they not a God-send to the people of Minnesota? Hoping you will have a more happy and profitable meeting than ever,

Respectfully yours,

W. E. BRIMHALL.

PLANTING FRUIT TREES.

An Essay read before the Minnesota Horticultural Society, at its Annual Meeting, January 17, 1871, by O. F. Brand, but never before published in the Transactions.

We sometimes meet with those who say they do not care to be troubled with trees that cannot take care of themselves, or that need protection in winter, in any form. This idea would be a rational one were they to leave the trees to nature, in their natural home and under natural conditions; but as the organic conditions of all our fruit trees have been materially changed by the artificial means that

have been used to bring about the results so gratifying to us, it becomes the province of man to assist nature in producing such results as shall be deemed most profitable and useful. Those who would leave their trees to take care of themselves after having placed them in an artificial position, will find that nature will neither respect their ignorance nor reward their indolence. The cultivator must not expect that nature will undo what he has poorly done, or presume that after a tree has received an unnatural and immature growth, it will pass through the winter as safely as a tree grown entirely by nature. It appears to be an established fact that the safety of a tree through the winter depends, to a great extent, upon its condition in the autumn preceding; and it cannot be too firmly impressed upon the mind of the cultivator, that the ripening of the seasons growth is of the greatest importance, to enable us to bring our trees safely through our extremely cold and changeable winters. A few words from a celebrated writer will throw some light on this subject: "The mechanical action of frost may, however, undoubtedly be guarded against to a great extent. It is well known that the same plant growing in a dry climate, or in a dry soil, or in a situation thoroughly drained from water during the winter, will resist much more cold than if cultivated in a damp climate, or in a place affected by water in winter. Whatever tends to render tissue moist will increase the power of conducting heat, and consequently augment the susceptibility of plants to the action of frost, and whatever tends to diminish the humidity will also diminish their conducting power, and with it their susceptibility. This is an invariable law, and must consequently be regarded as a fundamental principle in horticulture, upon which success in the adaptation of plants to a climate less warm than all their own will essentially depend. The destructive effects of frosts upon the succulent parts of plants may thus be accounted for independently of the mechanical expansion of their parts; indeed, it is chiefly to that circumstance that the evil effects of cold in spring may be ascribed, for it has been found that trees contain nearly eight per cent. more of aqueous matter in March than at the end of January, and all experience shows that the cultivation of plants in situations where they are liable to be stimulated into growth, and consequently to be filled with fluid by the warmth and brightness of a mild protracted autumn, exposes them to the same bad consequences as growing them in damp places, where the wood does not ripen. The ripening process consists in the slow but gradual and complete removal of watery matter, and the conversion of fluid organizable materials into the more solid substances which are necessary to form woody fibre, and its effects are seen not only in the power conferred of resisting cold, but also in providing the secretions necessary to sustain the growth of the following spring.

Having thus clearly shown a great fundamental principle of horticulture, we must cause the operative details to harmonize with it. It is, however, unnecessary to give a minute description of the manner of cultivation to attain the object. A few general rules will suggest to us all the details necessary. First, we prefer to lay the ground off into lands 12 feet wide, and backfurrow it twice or

three times, or until the bottom of the deadfurrow is about three feet below the level. Then, if the soil is naturally wet, or has a cold, retentive subsoil, it would be well to fill the deadfurrow with small stones, then backfurrow over it until it is covered from two to three feet deep—four feet would be better. This will leave a ridge over the covered drain, six feet from an open drain. The matter of the distance apart that these drains should be, is a subject of argument, or rather, a matter of choice. By preparing the ground in this way the roots of the tree can run deep, and thus be protected from the long, severe drouths of summer, and the extreme cold of winter; for, with a loose, friable soil, the evaporation is less rapid during the long, protracted drouths which frequently occur during the early part of our summers. With such a soil the trees will make an early second growth, and mature their growth before the last of August. Any plan by which the planter can get a deeply-worked soil, thoroughly drained from below the frost, as likewise on the surface, will be sure to produce the desired result—a healthy growth and well-ripened wood.

APPENDIX D.

ABSTRACTS FROM THE REPORTS OF LOCAL AND COUNTY HORTICULTURAL SOCIETIES.

OLMSTED COUNTY HORTICULTURAL SOCIETY.

Meeting of July 15th, 1875.

Mr. A. W. Sias being called upon, said in regard to small fruit culture, that the whortleberry had been sadly neglected in this country. He had found near the head waters of Bear creek, some whortleberry bushes growing. He had transplanted some of them in his garden and they were growing finely. He thought there was nothing to hinder every one from having, at least, a small patch of this delicious berry. Mr. Sias also spoke of the gooseberry, and recommended its more general cultivation. He said that in England these berries, by diligent cultivation, were grown as large as Transcendent, and Hyslop crabs, some of them measuring quite two inches in diameter. Six years ago he undertook to improve some varieties, taking the seeds of Houghton's and Hurd's, and from these he had now about thirty-five varieties in bearing. Some of them were larger than the original berry, and he thought that by continuing the process further improvements might be made. He had experimented with black currants in the same manner, taking the seeds of the Black Naples, planting them year after year, he had raised some fine specimens, but the seedlings were later than the original plants. He doubted whether he had any seedlings superior to the Black Naples, but he could tell better in a year or two. Of raspberries, Mr. Sias said he thought the Hoag Seedling was superior to anything which he had seen. Next to this he would place Davison's Thornless on the list. He exhibited fine specimens of the Thornless and said this fruit was doing remarkably well. He also showed fine specimens picked from the thirty-five varieties of gooseberries which he was cultivating.

Mr. Pearce exhibited a currant bush of the Red Grape variety, and also specimens of the Mammoth Cluster raspberry.

Mr. Leland asked Mr. Pearce if he would cut out the old brush every year.

Mr. Pearce replied, he would cut them out every second year, at least.

Mr. Hillman inquired of Mr. Pearce what kind of raspberries he preferred.

Mr. Pearce said that he liked the Purple Cane very well. The Mammoth Cluster is a good variety; also the Thornless. The latter was an early variety and had produced better than any other variety which he had tested. He believed in thorough trimming.

Mr. Sias asked if it was not the best time to trim immediately after the fruit is off.

Mr. Pearce thought in that case the young canes would not be sufficiently protected from the winds.

Mr. Sias said he cut out the old canes, and supports the young stalks by tying them up.

Mr. Cook favored trimming immediately after bearing, and not let them grow more than one and a half feet high. The next year they may be allowed to grow two or three feet high. By properly mulching there is no difficulty in raising raspberries.

Mr. Hall said he picked ripe raspberries at his place on the second day of July.

Mr. A. Harkins inquired if the Thornless was as early as the Purple Cane.

Mr. Cook replied that they ripened about the same time.

Mr. Harkins said he did not protect his raspberries, still they were uninjured. He had the Purple Cane and the Philadelphia. Of the former he was picking about twenty quarts a day.

Mr. Sias said he had a few of a garden variety, which seemed to be a cross between the Black Cap and some red variety.

Mr. Hall said he had two hundred grape vines rooted. He would not recommend covering grape vines with anything besides straw.

Mr. Pearce moved that Mr. Cook be requested to furnish copies of his essay for publication in the city papers. Carried.

Mr. Cook exhibited several varieties of strawberries put up in small glass jars. He preferred for family use and general culture, Downer's Prolific; next to this is the Wilson's Albany Medium. The next best is Wilson's Albany Selected. For late fruit, the Green Prolific and the Kentucky are preferable.

Mr. Hillman spoke favorably of the currant. Its season continued longer than other small fruit. It is easily raised and always sells well in market.

Mr. Pearce said currants make excellent jelly.

Mr. J. A. Leonard thought currants would make excellent wine.

Mr. Sias thought gooseberries were ahead of currants, as three times as many could be raised with the same amount of labor. He spoke highly of the American Seedling.

SMALL FRUIT CULTURE.

An Essay read before the Olmsted County Horticultural Society, July 17th, 1875, by Mr. M. W. Cook.

Mr. President and Gentlemen :

The subject of small fruit culture has been thoroughly discussed by the various horticultural societies of the different States and counties, and while there is little that is new to offer, there is much that is interesting and of great importance. Having just experienced three years of very trying, and to many kinds of fruit trees very damaging weather, the idea is rapidly gaining ground that if we would secure a supply of fruit with certainty and without long waiting, we must give more attention to the cultivation of small fruit.

Time will not permit me to enter upon a long argument to show the great importance of this branch of horticulture, but I will briefly reply to the old question, "Will it pay?" which is daily asked, by stating a few facts, and leaving each one to draw his own conclusions from them.

The yield of strawberries varies greatly according to mode of culture and varieties planted, but thirty bushels of strawberries is no greater yield than ten bushels of corn. The yield per acre varies, then, from fifty to more than two hundred bushels, and the value of these in the market from \$100 to \$1,500. They may be as easily raised as potatoes after the plantation is made, if rightly done; badly cultivated they are costly.

I am very frequently asked the questions, "How shall I prepare the land?" "How and when shall I set the plants?" "What varieties are the best?" "What care do they need?" etc., etc. I answer, any ground that will grow good corn or potatoes will produce good strawberries. Clear the ground of weeds, roots and seeds; plough or spade deeply. An application of thirty bushels of ashes, ten of lime, and two of salt per acre, although not necessary to a fair crop, is very beneficial. It should be thoroughly mixed with the soil about a week before the plants are set. As a general rule the spring is the best time to set plants, but if strong, healthy plants can be obtained early in the fall, they may be set with safety, and will produce a partial crop the following season. For garden culture the proper distance apart to set, is one foot by one and one-half feet; for field culture one foot by two and one-half or three feet, giving in the latter case a chance to do nearly all the work with the cultivator or fine tooth harrow. Whatever mode is adopted, set the rows straight. Clean culture is of the first importance.

Some varieties do well on almost any soil, while others require a particular kind of soil, and are unsafe except to test on a small

scale. For profit, plant those kinds only that can always be relied upon, and be sure that the plants are pure. I have tested on my grounds more than twenty-five kinds, and find after an experience of ten years that the sorts which it will do to recommend, are few. Downer's Prolific is unquestionably the best early variety, Wilson's Albany the best medium and Green Prolific the best late kind. These three varieties do well on all soils, and under all modes of cultivation. Among the new varieties that promise well are Boyden's No. 30, and the Kentucky, both very late. By planting these varieties we may have this delicious fruit for at least one month.

When set in the spring, the fruit stems should be removed the first season. Cover in the fall with straw or wild hay; either must be free from foul seed. In the spring remove the covering leaving it at the end of the bed; cultivate until the berries begin to turn, and then put the mulching between the rows, and wet it two or three times during the bearing season if possible. If the directions given are followed, my word for it, you will be rewarded with an abundance of this healthful and delicious fruit. Fortunately it is so easily raised that the poorest owner of a few square rods may have it in abundance. It will contribute to health, comfort and economy, save butcher's and grocer's bills, and make home pleasant. One-twentieth of an acre as well cultivated as a field of corn should be, and set with an early, a medium and a late variety would yield an average of four quarts per day for from four to six weeks. In order to accomplish so desirable a result, who would hesitate to devote even one-eighth of an acre to strawberries? Make your plans now, decide upon the number of plants of each kind you will need, make arrangements to procure them reasonably, prepare the ground at once, set out the plants in good time, and you cannot fail to be highly gratified with the result. Remember the conditions. Unmixed plants true to name, and clean culture. J. J. Thomas says if you allow them to become weedy, they will bear but little, and you will come to the conclusion that strawberries are a humbug. Do the work early and well, and the expense will be small, the labor light and the reward great.

Next in their turn, and right on the heels of the strawberry, come currants, raspberries and grapes. Thus, with small expense and proper care, our tables may be supplied with the various kinds of small fruits from three to four months.

Raspberries that have proved sufficiently hardy by proper pruning and a little protection, to warrant their culture, are, for blackcaps, Davison's Thornless, Doolittle and Mammoth Cluster; for red, Purple Cane and Philadelphia, the last being the latest and best for general culture. For grapes, the Concord and Janesville are hardy and of fair quality. Raspberries, the first year after setting, should not be allowed to grow more than one and a half feet in height, but kept pinched or cut back, which will cause them to throw out side branches, which should also be pinched off when one foot long, thus causing them to be stocky and not easily broken by the wind, and protected early in winter. The second year let them grow two and half a feet high—not higher. By pruning in this way and with a little protection, we need have no fears from winter killing.

Gentlemen, if what we may do and say shall have a tendency to awaken an interest among farmers and owners of village lots to a renewed interest in the subject of small fruit culture, we shall feel well paid. Having briefly and indirectly answered the question, in the light of dollars and cents at least, will it pay, I leave the subject to your discussions.

MEETING OF FEBRUARY 12, 1876.

A meeting of the Olmsted County Horticultural Society was held at Upman's Hall last Saturday afternoon, the 12th inst. Quite a number of members were present, and the discussions were spirited and full of interest.

The President, M. W. Leland, called the meeting to order.

Mr. M. Pearce spoke of the importance of maintaining an organization as a society. Ours was the only county horticultural society in the State; we lived in one of the best counties in the State for fruit-growing, and he desired to see their membership largely increased. The attendance at the meetings had not been large heretofore, and he proposed a reduction in the membership fee. Mr. E. B. Jordan was opposed to the motion, and would favor raising it to \$2 a member. He was willing to be one of five to pay all the expenses of the society.

The subject was laid over for future consideration.

The subject of the annual election of officers was next considered. After some discussion it was decided to proceed with the selection of officers instead of waiting until the next regular meeting.

On motion, the following officers were chosen for the ensuing year:

President—M. W. Leland.

Vice President—Wm. Somerville.

Treasurer—A. W. Sias.

Secretary—S. D. Hillman.

Assistant Secretary—G. W. Mason.

Mr. Jordan said that horticulture was not looked upon with as much favor as it should be, for, with the new varieties of apples and hybrids he was encouraged to believe that Minnesota would yet become a fruit growing district. The hybrids could be grown successfully and would yield fruit unsurpassed by Michigan standard apples. He had ten acres planted, and should set 300 more trees of the different hybrid varieties in the spring. They would grow wherever the popular or maple could be grown, and bear excellent crops of fruit. The Early Strawberry was among the first to come into bearing, and the fruit ripens earliest of the hybrids. The Conical ripens its fruit in September, keeps till January, and is superior to the Gilliflower. He had gathered a bushel from a tree set four years. He should

plant 100 this spring. The Orange was the most valuable tree of these varieties; fruit keeps until January, prolific bearer, excellent quality, and was highly recommended by the State Society. He also spoke of the merits of the Quaker Beauty, Palmer's Sweet and Woodland Winter.

Mr. Pearce also spoke highly of the hybrids and thought they would take the place largely of standards in this country. They bore early and produced abundant crops of fruit. He spoke highly of the Orange, and said it was perfectly hardy. An impression prevailed that it was impossible to grow apples in consequence of farmers having spent hundreds of dollars on trees which had proved to be useless. He would recommend the hybrids for general cultivation, also the more hardy varieties of seedling apples. He would urge farmers and fruit growers to set them out in large quantities, and in five years the State would have a surplus of fruit. The State Society had made out a list of "iron-clads."

Of this list the Early Strawberry stands at the head. The tree is a strong and handsome grower, bearing well alternate years. Fruit the size of Transcendent. The Orange grows slower; the fruit is larger and keeps much later. The Minnesota bears fruit as large as the Russet, nearly white, good quality and keeps till February.

M. W. Cook said he could fully endorse what Mr. Pearce had said in regard to the hybrids. They were divided into three classes by the State Society, but he considered the dozen or more varieties mentioned as hardy and worthy of recommendation.

Mr. Leland said he had tried everything to get rid of blight and succeeded best by growing trees on sod ground.

Mr. Richardson thought that deep planting would secure the same result.

A discussion here followed as to the causes of blight, its nature and the remedy.

Mr. Pearce said it was a fungus growth peculiar to vegetation, and could be prevented by the use of quick lime.

GERMAN HORTICULTURAL SOCIETY OF RAMSEY CO.

ST. PAUL, April 10, 1876.

Mr. Chas. Y. Lacy, Minneapolis:

DEAR SIR:—Our "*German Horticultural Society of Ramsey County*" consists of twenty members, all practical gardeners, engaged in floriculture, fruit and vegetable gardening. The officers of the society are:

President—J. C. Fleischer.
 Vice President—Edward Blum.
 Secretary—A. Miller.
 Treasurer—Alois Meier.
 Librarian—Ch. Bunde.

We meet every first Saturday of the month. Our dues, \$1.00 for membership and \$1.00 per year, payable quarterly.

We keep several horticultural papers on file, read them at our meetings, and discuss those articles which seem interesting to the members.

Yours truly,

J. C. FLEISCHER.

RICE COUNTY HORTICULTURAL SOCIETY.

FARIBAULT, Minn., March 29, 1876.

Chas. Y. Lacy, Esq., Secretary State Horticultural Society:

SIR:—Pursuant to instructions, I have to state, that a meeting of the Faribault Fruit Grower's Club was held in this city, pursuant to call, March 10, 1876.

On motion, it was resolved to reorganize as the Rice County Horticultural Society, with the following officers:

President, R. A. Mott; Vice President, J. P. Andrews; Secretary, A. W. McKinstry; Treasurer, Wm. Wachlin.

A discussion was held upon the subject of hardy apples.

Voted to place Duchess first on the list, Melinda second.

The subject of Cranberry cultivation was also discussed.

Adjourned to Wednesday, April 12, 1876.

Very Respectfully,

A. W. MCKINSTRY,
 Secretary.

APPENDIX E.

DESCRIPTIONS OF NEW VARIETIES OF FRUIT.

DESCRIPTION OF O. V. ROLLINS' NEW SEEDLING APPLES, AND FAMEUSE CRAB, BY A. W. SIAS.

ROCHESTER, Minn., Jan. 24th, 1876.

What is known as the Rollins' varieties were started from seed brought from Northern Vermont, and planted on a rather low, flat, open prairie, known as Greenwood Prairie, in the township of Elgin, Wabasha county. One variety takes its name from the county in which it originated, and another from the township. The name Rollins' Pippin was suggested by its slight resemblance to the well known Fall Pippin. (This, however, is a better apple in quality, and a better keeper.) The name Rollins' Prolific was suggested from its great bearing qualities, having produced over three barrels in a single season.

The four varieties above mentioned were named by A. W. Sias, Rochester, Minn., who was the first to propagate and bring them to public notice. Also the Viola, a fall variety, from Mr. Rollins' grounds, that first fruited in the township of Viola—hence its name. The other two varieties are Rollins' Russet and Spice-sour.

Viola.

Tree strong, straight, hardy and handsome; fruit about the size of Fameuse; shape and color resembling the R. I. Greening; quality hard to beat; season, September.

Rollins' Russet.

Tree a strong and rapid grower; ripens its wood earlier in the fall than the Haas, and is believed to be more hardy. Fruit, in color, size, quality, and as to keeping qualities, more closely resembles the Roxbury, or Boston Russet, than anything else with which I am acquainted. Great bearer; season, January to June (or July.)

Rollins' Pippin.

Tree vigorous, straight and hardy; fruit large, color yellow, fine-grained, flesh tender and delicious. Season, October to May.

Elgin Beauty.

Said to be more hardy than Duchess of Oldenburg; medium grower; straight and handsome, fruit medium size; color, streaked with red on yellow ground; flesh sometimes of a pinkish color, tender, moderately juicy, with a rich, sub-acid flavor; season, November to March.

Wabasha.

Tree a strong grower; fruit medium size; flesh tender, sprightly, with a pleasant, acid flavor. This variety has fruited every season since the hard winter of '72, and the tree looks remarkably well; season, December to March.

Rollins' Prolific.

Moderate grower; hardy, an abundant bearer; fruit size of Fameuse; splendid for culinary purposes, as tart as the R. I. Greening, which it somewhat resembles in color, size and quality, but hardly as rich in flavor; season, January to March.

Spice Sour.

This tree, although believed to be fully as hardy as the St. Lawrence, is doubtless less hardy than either of the six varieties above described. Fruit medium, or below; flesh moderately juicy, tender, with a pleasant, aromatic flavor; season, December to April.

The seven varieties above named all originated with O. V. Rollins, Elgin, Wabasha county, Minn.

Fameuse Crab

originated with A. W. Sias, Rochester, Minn. Tree handsome; stocky grower; apparently as hardy as Transcendent. Winter of '72-3 had no more effect upon it than the very mildest winters since it first started from the seed seven years ago. All the lower branches of this tree start out exactly at right angles with the trunk, or body of the tree, extend some ten inches, then gradually turn upward. Fruit size of Transcendent; color, bright, glossy red cheek, with shaded side nearly white; sub-acid flavor, wholly destitute of astringency; flesh white, quality good; season, December to February, (or possibly later, as it bore this year for the first time.)

TRANSACTIONS
OF THE
MINNESOTA
STATE HORTICULTURAL SOCIETY,

PROCEEDINGS, ESSAYS, AND REPORTS

AT THE SUMMER MEETING,

HELD AT THE

STATE AGRICULTURAL COLLEGE, JUNE 28TH, 1876,

AND AT THE

ANNUAL WINTER MEETING,

HELD AT

Owatonna, January 16th, 17th & 18th, 1877.

Prepared by CHAS. Y. LACY, Secretary.

SAINT PAUL:
PIONEER PRESS COMPANY.
1877.



CONTENTS.

	PAGE.
Officers for 1877.....	17
Standing Committees.....	17
Local and County Horticultural Societies.....	19
Members for 1877.....	20
Names too late for 1876.....	21
Honorary and Life Members.....	22
Fruit Lists as approved or revised at Owatonna.....	23
Apples.....	23
Crab-apples.....	24
Grapes.....	25
Strawberries.....	25
Raspberries.....	25
Currants.....	26
Plums.....	26
Gooseberries.....	26
Evergreens.....	26
Proceedings at Summer Meeting.....	29
Announcement.....	29
Wisconsin Horticultural Society.....	29
Discussion.....	30
The Effects of last Winter.....	30
Flowers.....	31
Insects on Currants.....	32
Training Raspberries.....	33
Fruit Prospects.....	33
Report of Mr. Meyer, General Fruit.....	33
Discussion.....	34
Small Fruits.....	34
Imperfect Strawberries.....	35
Uncovering Plants.....	35
Prof. Morey's Paper, Nature and Growth of Fungi.....	36
Discussion.....	43

	PAGE.
Mr. Grimes' Paper, Influence of Horticulture in Education	43
Discussion.....	47
State Fair.....	47
Centennial Exhibiton.....	47
Thanks to the Ladies.....	48
County Horticultural Societies.....	48
Proceedings at the Winter Meeting at Owatonna.....	49
Programme.....	49
Discussion.....	49
Agricultural Society.....	51
Appointment of Committees.....	52
F. G. Gould's Paper, Grape Culture.....	53
Introduction.....	53
Location.....	53
Varieties to Plant.....	53
Starting Plants from Cuttings.....	54
Setting in Vineyard.....	54
Pruning.....	54
Protection.....	55
Discussion of same.....	55
Depth of Covering—Propagation.....	55
Cultivation.....	55
Distance.....	56
Quality of Fruit.....	56
Pruning.....	56
Delaware.....	57
Training.....	57
Soil and Elevation.....	58
Varieties.....	58
Janesville.....	58
Other Varieties.....	59
Concord and Delaware.....	59
Hartford Prolific and Janesville.....	60
Mildew.....	60
Report of O. D. Storrs, of General Fruit Committee.....	61
Insect Enemies.....	61
Strawberries.....	61
Gooseberries.....	61
Raspberries.....	62
Currants.....	62
Grapes.....	62

	PAGE.
Plums.....	62
Evergreens.....	62
Apples.....	62
Crab-apples.....	63
Deep and Shallow Planting.....	63
Flowers.....	63
Discussion on same.....	64
Larches.....	64
Report of G. W. Fuller, of General Fruit Committee.....	64
Apples.....	64
Blight and Insects.....	64
Effects of Last Winter.....	65
Evergreens.....	65
Another Report from Mr. Fuller.....	65
Effects of Last Winter.....	65
Small Fruits.....	65
Pears.....	66
Insects.....	66
Discussion on above.....	66
Peach Apple.....	66
Two kinds of Duchess.....	66
Report of Mr. Boxell of General Fruit Committee.....	67
The Past Crop.....	67
Strawberries—Wilson and Downing.....	67
Currants.....	67
Raspberries.....	67
The Turner.....	68
Philadelphia.....	68
Grapes.....	68
“Black Knot”.....	68
Discussion of same.....	69
Raspberries—Varieties.....	69
Insects in Canes.....	69
Black-caps.....	69
Other insects and Remedies.....	70
Plant Lice.....	70
Ants.....	70
Address of President Smith.....	71
Mr. Bates' Paper, Apple Culture.....	74
Site for Orchard.....	74
Soil.....	74

	PAGE.
Varieties.....	74
Planting, Training and Pruning.....	75
Other Fruits.....	75
Discussion on same.....	76
Deep Planting.....	76
Mr. Kenney's Paper, Cranberry Culture.....	76
Discussion on same.....	78
Importance of Cranberries.....	78
Mr. Brimhall's Paper, Perennial Garden Vegetables.....	79
Asparagus.—Propagation.....	79
Cutting.....	79
Manuring.....	80
Forcing.....	80
Planting.....	80
Marketing.....	80
Varieties.....	80
Rhubarb—Propagation.....	80
Soil.....	80
Care.....	80
Varieties.....	81
Horse-radish—Soil.....	81
Preparation.....	81
Propagation.....	81
Planting.....	81
Dressing.....	81
Discussion on same.....	82
Asparagus.....	82
Horse-radish.....	82
Mr. Hart's Letter, Blight.....	82
Discussion on same.....	83
Cause and Cure of Blight.....	83
Mr. Scott's Paper, Plants under Cultivation.....	84
Report of Delegates to Centennial Exhibition.....	85
Discussion on same.....	85
Fruit Charts.....	85
Preserving Fruits.....	86
Strawberries, Discussion and Revision of List.....	86
Ida.....	87
Champion and Charles Downing.....	87
Hart's Seedling.....	87
History of Hart's seedling.....	87

	PAGE.
Boyden's No. 15 and Red Jacket.....	88
Countess de Haricourt.....	88
Raspberries, Discussion and Revision of List.....	88
Turner and Philadelphia.....	88
Herstine and Ganargua.....	89
Golden Thornless.....	89
Mr. Hodges Paper, Propagation of Trees by Cuttings.....	89
Soil and its preparation.....	90
Time to Prepare Cuttings.....	92
Care of Cuttings till Planted.....	92
Discussion on same.....	92
Currants, Discussion and Revision of List.....	93
Gooseberries, Discussion.....	94
Janesville Grape.....	94
Discussion on Conditions of Success in Fruit Culture.....	94
Gooseberries again.....	95
Mr. Pearce's Paper, Fall Planting and Root Killing of Fruit Trees.....	96
Fall Planting.....	96
Root Killing.....	96
Discussion on same.....	97
• Trunk Protection.....	98
Report of Auditing Committee.....	98
Mr. Booth's Paper; Laying Out, Planting and Care of Small Dooryards	98
Public Examples.....	99
Location and Soil.....	100
The House and its Elevation.....	100
The Garden.....	100
Sodding and Seeding.....	101
Walks and Flower-Beds.....	101
Trees.....	102
Care of Lawns.....	102
Care of Plants.....	102
When the House is Already Built.....	102
House in Town.....	102
Conclusion.....	103
Discussion on same.....	103
Sodding and Seeding Lawns.....	103
Fall and Spring Seeding.....	103
Miss Share's Paper, Annuals.....	104
Amendments to Constitution and By-Laws.....	108
Keeping Transcendents and other Fruit.....	108

	PAGE.
Report of the Secretary	109
Summer Meeting	109
Centennial Matters	110
Transactions of the Society	110
Library	110
Membership	111
Expenses	111
Report of the Treasurer	111
Election of Officers	112
President	112
Vice Presidents	112
Secretary	112
Treasurer	112
Executive Committee	112
Game Laws	118
Articles on Exhibition, Report of Committee	118
Harris Seedling Apples, Description	118
Cataloguing Fruits, &c.	118
Apples, Discussion and Revision of List	118
Duchess, Wealthy and Tetofsky	118
Haas	118
Pomological Society	117
Taxation of Nursery Stock	117
Revision of Apple List Resumed	118
Haas again	118
Plumb's Cider	118
Melinda	119
Stewart's Sweet, Walbridge and Peach	119
Price's Sweet	119
Saxton	119
St. Lawrence	120
Utter's Red	120
Fameuse	120
Talman Sweet	120
Alaska	121
White Astrachan	121
Julia	121
Molly	121
Bollin's Pippin, Rollin's Russet, Rollin's Prolific, Elgin Beauty, Wabasha, Viola, Queen of Elgin, &c.	121
Clawson and Kimble	122

	PAGE
Hart's Seedlings.....	122
Crab-Apples, Discussion and Revision of List.....	123
Soulard.....	123
Meador's Winter.....	123
Hesper Blush.....	123
Whitney's No. 20.....	123
Alaska.....	123
Blight on Crabs.....	124
Meador's Sweet Russet.....	124
Sylvan Sweet.....	125
Brier's Sweet and Northfield Beauty.....	125
Virginia.....	125
Brier's Sweet again.....	125
Next Meeting of the Society.....	125
Organization of County Horticultural Societies.....	126
Report on President's Address.....	126
Report of Mr. Latham of General Fruit Committee.....	126
Review.....	126
Duchess.....	127
Tetofsky.....	127
Wealthy.....	127
Crab-Apples.....	128
Russian Apples.....	128
Seedlings.....	128
Grapes.....	129
Congratulations.....	129
Evergreens.....	129
Report of Mr. Fish, of General Fruit Committee.....	129
Apples.....	130
Small Fruits.....	130
Transactions not received.....	131
Delegates to Meeting of Agricultural Society.....	131
Honorary Members.....	132
Summer Meeting.....	132
Report of Mr. Carter of General Fruit Committee.....	132
Small Fruits.....	132
Plums.....	133
Apples.....	133
Grapes.....	134
Discussion on same.....	135
Tar.....	135

	Page.
Trunk Injury.....	135
Reports of Mr. Harris on Insects, &c.....	136
Discussion on same.....	140
Smoking.....	140
Borers.....	140
Amendments to Constitution and By-Laws.....	141
Fruit for State Exhibition.....	141
Delegates to Pomological Society.....	141
Transactions for County Societies...	141
Ornithology.....	142
Final Resolutions.....	142
Wives of Members.....	142
Adjournment.....	142

INDEX TO APPENDIX.

	PAGE.
Appendix A.....	145
Report of the Delegates to the Meeting of the American Pomological Society. Part I.....	145
Arrangement of fruits for examination.....	146
Notice of Award.....	147
Varieties, Contributions, &c. Part II.....	148
Preparing for a display at the Centennial Exhibition.....	148
Wyman Elliot substitute on committee in place of Prof. C. Y. Lacy.	149
List of Fruits received and by whom contributed.....	149
W. E. Brimhall.....	149
Truman M. Smith.....	149
Mrs. Wm. Paist.....	149
Charles Hause.....	149
Thomas Odell.....	149
F. G. Gould.....	149
Jacob Martella....	149
Wyman Elliot....	149
J. T. Grimes.....	150
Geo. Hackett.....	150
A. W. Sias.....	150
G. W. Clark.....	150
James Hardwick.....	151
Winona County Farm.—W. D. Hatch.....	151
Willard Harrison.....	151
F. B. Rowell.....	151
S. E. Eldridge.....	151
Norman Buck.....	151
C. F. Buck.....	151
Geo. E. King.....	151
John Hart.....	152
O. M. Lord.....	152
Mrs. Mary Campbell.....	152

	Page.
James Mitchell.....	152
P. A. Jewell.....	152
I. H. Moulton.....	152
J. C. Beach.....	153
E. B. Jordon.....	153
John S. Harris.....	153
Names of Contributors omitted may be published in future report	153
List of fruits Starred for Minnesota in the Biennial Report of the American Pomological Society.....	154
Number of varieties contained in list.....	154
Comparison as to varieties exhibited at Centennial and at our State Fair.....	154
Awards at the Centennial, Pomological Department. Part III...	155
Canada.....	155
Connecticut.....	155
Delaware.....	156
District of Columbia.....	156
Florida.....	156
Indiana.....	156
Iowa.....	156
Kansas.....	156
Maine.....	156
Massachusetts.....	156
Michigan.....	157
Minnesota.....	157
Nebraska.....	157
New Jersey.....	157
New York.....	157
North Carolina.....	157
Ohio.....	157
Oregon.....	157
Pennsylvania.....	158
Wisconsin.....	158
List of Acting Judges.....	158
State Exhibitions—Am. Pomological Society Reunion. Part IV.	158
States receiving especial mention—	
Wisconsin.....	158
Iowa.....	159
Illinois.....	159
California.....	159
New York.....	159

	PAGE.
Exhibition of Pennsylvania Horticultural Society. Part V.....	161
Appendix B. Local and County Horticultural Societies.....	163
German Horticultural Society of Ramsey County.....	163
Rice County Horticultural Society.....	163
Nicollet County Horticultural Society.....	163
McLeod County Horticultural Society.....	164
Olmsted County Horticultural Society.....	164
Varieties of Apples recommended.....	164
Seeding down Orchards.....	164
Minnesota Fruit.....	165
A Successful Fruit Grower.....	165
The Rochester Nursery.....	166
Letter from E. B. Jordon.....	167
Appendix C. Articles of Incorporation.....	169
By-Laws of Association.....	171
Appendix D. Laws of Special Interest to Horticulturists.....	173

OFFICERS FOR 1877.

PRESIDENT.

TRUMAN M. SMITH.....St. Paul.

VICE PRESIDENTS.

E. H. S. DART, First District.....Owatonna.

A. W. MCKINSTRY, Second District.....Faribault.

J. T. GRIMES, Third District.....Minneapolis.

SECRETARY.

CHAS. Y. LACY.....Minneapolis.

TREASURER.

A. W. SIAS.....Rochester.

STANDING COMMITTEES.

EXECUTIVE.

WYMAN ELLIOT.....Minneapolis.

WM. E. BRIMHALL.....St. Paul.

O. F. BRAND.....Faribault.

J. S. HARRIS.....La Crescent.

U. S. HOLLISTER.....St. Paul.

PRESIDENT AND SECRETARY *Ex Officio*.

ON ENTOMOLOGY.

HON. R. J. MENDENHALL.....Minneapolis.

J. S. HARRIS.....La Crescent.

WYMAN ELLIOT.....Minneapolis.

ON FLOWERS AND FLORICULTURE.

Miss HORTENSE SHARE.....Rosemount.
 J. C. FLEISCHER.....St. Paul.
 WM. CANNON.....Fort Abraham Lincoln, D.T.

ON VEGETABLES AND MARKET GARDENS.

WM. E. BRIMHALL.....St. Paul.
 J. T. GRIMES.....Minneapolis.
 J. C. KRAMER.....La Crescent.

ON TREES FOR THE FOREST AND FOREST CULTURE.

L. B. HODGES.....St. Paul.
 JOHN K. KEPNER.....Little Valley, Olmsted Co.
 J. H. BROWN... ..Lac qui Parle.

ON CATALOGUING FRUITS AND SHADE AND ORNAMENTAL TREES AND PLANTS.

(See Page 115.)

P. A. JEWELL.....Lake City.
 WYMAN ELLIOT.....Minneapolis.
 A. W. SIAS.....Rochester.

PERMANENT COMMITTEE ON OBITUARIES.

COL. J. H. STEVENS.....Minneapolis.
 HON. C. M. LORING....."
 GEN. LEVI NUTTING.....Faribault.

TO COLLECT FRUITS FOR MEETING OF AMERICAN POMOLOGICAL SOCIETY.

O. F. BRAND.....Faribault.
 J. S. HARRIS.....La Crescent.
 A. W. SIAS.....Rochester.

ON AMENDMENTS TO CONSTITUTION AND BY-LAWS.

CHAS. Y. LACY.....Minneapolis.
 E. H. S. DART.....Owatonna.
 U. S. HOLLISTER.....St. Paul.

ON FRUIT CHARTS.

(See Page 85.)

J. S. HARRIS.....	La Crescent.
P. A. JEWELL.....	Lake City.
O. F. BRAND.....	Faribault.
J. T. GRIMES.....	Minneapolis.
—, —, SMITH.....	St. Cloud.

GENERAL FRUIT.

(To be appointed hereafter.)

LOCAL AND COUNTY HORTICULTURAL SOCIETIES.

(See Appendix.)

MEMBERS FOR 1877.

Anthony, David.....	Kasson, Dodge county.
Arnold, W. W.....	Clinton Falls, Steele county.
Andrew, John B.....	Faribault, Rice county.
Bernstein, Wm.....	Minneapolis, Hennepin county.
Blakeley, Capt. R.....	St. Paul, Ramsey county.
Brackett, Hon. Geo. A.....	Minneapolis, Hennepin county.
Bower, Thomas.....	St. Paul, Ramsey county.
Boxell, J. W.....	Afton, Washington county.
Brimhall, Wm. E.....	St. Paul, Ramsey county.
Brand, O. F.....	Faribault, Rice county.
Booth, J. E.....	Minnehaha, Hennepin county.
Cameron, G. W.....	Dundas, Rice county.
Cannon, Wm.....	Fort Abraham Lincoln, D. T.
Carter, T. G.....	St. Peter, Nicollet county.
Clement, J. B.....	Faribault, Rice county.
Cochrane, Thomas, Jr.....	St. Paul, Ramsey county.
Cook, M. W.....	Rochester, Olmsted county.
Dart, E. H. S.....	Owatonna, Steele county.
Day, Ditus.....	Farmington, Dakota county.
Drake, Hon. E. F.....	St. Paul, Ramsey county.
Dennerline, J. G. A.....	Owatonna, Steele county.
Elliot, Wyman.....	Minneapolis, Hennepin county.
Fox, C. F.....	South Troy, Wabasha county.
Grimes, J. T.....	Minneapolis, Hennepin county.
Gronvold, Dr. Chr.....	Norway, Goodhue county.
Hart, John.....	Winona, Winona county.
Hoag, M. J.....	Rochester, Olmsted county.
Hollister, U. S.....	St. Paul, Ramsey county.
Harris, J. S.....	La Crescent, Houston county.
Humphrey, D. W.....	Faribault, Rice county.
Hodges, L. B.....	St. Paul, Ramsey county.
Jewell, P. A.....	Lake City, Wabasha county.
Jordan, E. B.....	Rochester, Olmsted county.
Kramer, J. C.....	La Crescent, Houston county.
Kenney, Seth H.....	Morristown, Rice county.
Laing, Prof. R. W.....	Minneapolis, Hennepin county-

Lacy, Chas. Y	Minneapolis, Hennepin county.
Lindersmith, Orlando	Owatonna, Steele county.
McHenry, Wm	St. Charles, Winona county.
McKellup, C. D	Faribault, Rice county.
Middleton, James	Woodbury, Washington county.
McKinstry, A. W	Faribault, Rice county.
McClung, J. W	St. Paul, Ramsey county.
Morey, Prof. Chas. A	Winona, Winona county.
Mathews, B. A	Knoxville, Iowa.
Mott, R. A	Faribault, Rice county.
Miller, C. F	Dundas, Rice county.
Norquist, John	Red Wing, Goodhue county.
Pearce, M	Rochester, Olmsted county.
Phillips, A. J	West Salem, Wis.
Pye, S. M	Faribault, Rice county.
Rice, Hon. H. M	St. Paul, Ramsey county.
Smith, T. Tunis	St. Paul, Ramsey county.
Scott, W. T	Minneapolis, Hennepin county.
Storrs, O. D	Winsted Lake, McLeod county.
Sias, A. W	Rochester, Olmsted county.
Smith, J. A	Minneapolis, Hennepin county.
Smith, Truman M	St. Paul, Ramsey county.
Smith, C. M	Rochester, Olmsted county.
Somerville, Wm	Rochester, Olmsted county.
Thompson, Josiah	Minneapolis, Hennepin county.
Wachlin, Wm	Faribault, Rice county.
Wilcox, E	Trempealeau, Wis.

The wives of members are members of the Society without fee.

NAMES TOO LATE FOR 1876.

The following names of members for 1876 were received too late for insertion in the Transactions of last year :

Anthony, David	Kasson, Dodge Co.
Bernstein, Wm	Minneapolis, Hennepin Co.
Fisk, Woodbury	Minneapolis, Hennepin Co.
Hendrickson, W. G	St. Paul, Ramsey Co.
Hoag, Chas	Richfield, Hennepin Co.
Howe, G. H	Minneapolis, Hennepin Co.
Hoffman, G. J	Worthington, Nobles Co.
Kramer, J. C	La Crescent, Houston Co.
Norquist, John	Red Wing, Goodhue Co.

Prescott, Chas. A.....St. Paul, Ramsey Co.
Winchell, Prof. N. H.....Minneapolis, Hennepin Co.

HONORARY MEMBERS.

A. G. Tuttle, Baraboo, Wis., elected.....1873
O. S. Willey, Madison, Wis., elected1873
Wm. W. Folwell, Minneapolis, Minn., elected1873
George Peffer, Pewaukee, Wis., elected.....1874
Miss Hortense Share, Rosemount, Minn., elected.....1877
Mrs. C. O. Van Cleve, Minneapolis, Minn., elected.....1877

LIFE MEMBERS.

Mrs. Wm. Palst.....St. Paul, Minn.

FRUIT LISTS,

AS APPROVED OR REVISED AT THE ANNUAL MEETING AT OWATONNA, JAN.
16TH TO 18TH, 1877.

NOTE.—It should be remembered that negative votes are not always unfavorable ones. Those casting them may be in favor of placing the variety in a higher list or in a lower one.

APPLES.

(See page 116 for discussion.)

Recommended for general cultivation—

Duchess of Oldenburg.

Wealthy.

Recommended for planting in limited quantities—

Tetofsky.

Recommended for general cultivation in favorable localities—

Haas.

Price's Sweet. 5 for and 2 against.

Plum Cider. 7 for and 1 against.

Saxton. 6 for and 2 against.

Recommended for favorable localities—

St. Lawrence.

Fameuse. Unanimous vote.

Utter's Red.

Talman's Sweet. 4 for and 1 against.

Recommended for general trial throughout the State—

White Astrachan.

Elgin Beauty.

Recommended for trial—

Melinda. 8 for and 1 against.

Walbridge. Unanimous vote.

Stewart's Sweet. Unanimous vote.

Peach. Unanimous vote.

Recommended for trial by amateurs and pomologists—

Alaska.	Queen of Elgin. Unanimous vote.
Julia. 7 for and 1 against.	Rollin's Pippin. Unanimous vote.
Molly. Unanimous vote.	Rollin's Russet. Unanimous vote.
Clayson. Unanimous vote.	Rollin's Prolific. Unanimous vote.
Kimball. Unanimous vote.	Wabasha. Unanimous vote.
	Hart's Seedling, No. 7. Unanimous vote.
	Hart's Seedling, No. 11. Unanimous vote.
	Viola. Unanimous vote.

CRAB APPLES.

(See page 123 for discussion.)

Recommended for general trial—

Early Strawberry.	Minnesota.
Orange.	Quaker Beauty.
Beecher's Sweet.	Conical.
Meador's Winter.	Malden's Blush.
Hesper Blush. 3 for and 1 against.	
Woodlawn Red. 3 for and 3 against.	
Meador's Sweet Russet. 5 for and 2 against.	

Recommended for general trial in favorable localities—

Aiken's Striped Winter.

Recommended for general trial in localities not subject to blight—

General Grant. (The least hardy on the list.)

Recommended for general planting by those not afraid of blight—

Transcendent.

Recommended for planting in small quantities—

Hyslop.

Recommended for trial by amateurs and nurserymen—

Whitney's No. 20. Unanimous vote.	Virginia. Unanimous vote.
Alaska. 7 for and 2 against.	Brier's Sweet. 6 for and 1 against.

Passed over without action—

Hutchinson's Sweet.	Aiken's Green Winter.
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GRAPES.

(For discussion see page 55.)

Recommended for general cultivation—

Concord. Unanimous vote. Delaware. Unanimous vote.

Recommended for planting in limited quantities—

Hartford Prolific. Unanimous vote.

Recommended for trial for its earliness—

Janesville. 4 for and 1 against.

STRAWBERRIES.

(For discussion see page 86.)

Recommended for general cultivation—

Wilson's Albany.

Recommended for cultivation by amateurs—

Green Prolific, as an abundant bearer.

Recommended for cultivation for home use—

Downer's Prolific.

Recommended for general trial—

Charles Downing.

Recommended for trial—

Michigan Seedling. Countess de Harcourt.
Prouty's Seedling.

RASPBERRIES, BLACK-CAPS.

(For discussion see page 88.)

Recommended for general cultivation—

Doolittle.

Seneca.

Recommended for trial—

Ontario.

RASPBERRIES, RED.

Recommended for general cultivation—

Philadelphia. 9 for and 1 against. Turner. 9 for and 1 against.

CURRANTS.

(For discussion see page 98.)

Recommended for general cultivation—

Red Dutch.

White Grape.

Victoria.

Recommended for general cultivation as a black variety—

Black Naples.

Recommended for trial—

Stewart's Seedling.

PLUMS.

(Action of 1876.)

Resolved, That in view of the vast number and variety of native plums of great excellence in our State, and the uncertainty of getting a genuine article by importation, therefore we recommend that our people depend principally upon our own native plums for a supply.

Recommended for trial—

Miner. (18 for, 4 against.)

De Soto. (10 for, 8 against.)

GOOSEBERRIES.

(For discussion see pages 94, 95.)

None were recommended.

EVERGREENS.

List adopted 1876 and approved 1877. The votes recorded are those of 1876.

White Spruce, 1st. (10 for, 8 against.)
Norway Spruce, 2d. (11 for, 8 against.)
Scotch Pine, 3rd. (18 for, none against.)
Balsam Fir, 4th. (15 for, none against.)
White Pine, 5th. (11 for, none against.)
American Arbor Vitæ, 6th. (11 for, 2 against.)
Red Cedar, 7th. (11 for, 4 against.)
Red or Norway Pine, 8th. (11 for, none against.)
Austrian Pine, 9th. (9 for, 7 against.)
Mountain Pine, 10th. (8 for, none against.)
Siberian Arbor Vitæ, 11th. (14 for, none against.)
Trailing Juniper, 12th. (18 for, none against.)

PROCEEDINGS AT THE SUMMER MEETING.

ANNOUNCEMENT.

MINNESOTA HORTICULTURAL SOCIETY,
MINNEAPOLIS, June 15, 1876.

This Society will hold a summer meeting and exhibition at the State Agricultural College, Minneapolis East, on Wednesday, June 28th, 1876, beginning at 9 o'clock, A. M. The following subjects will be introduced for discussion :

Insect Enemies of Fruit and Ornamental Trees, Small Fruits, Flowers and Vegetables; Effects of last winter on Fruit and Ornamental Trees, Shrubs, Plants, &c.; Fruit Prospects for the Present Year; Exhibition of Fruits at the Centennial; General Interests of the Society; Transplanting and care of Evergreens, Larches, &c.; Planting and Cultivating the Strawberry.

At 12 o'clock the citizens of Minneapolis and vicinity will invite the members and guests of the Society to partake of a Basket Dinner on the University grounds. At 1 o'clock P. M., Prof. Chas. A. Morey, of Winona Normal School, will deliver a lecture on the "Nature and Growth of Fungi," treating, in this connection, of those diseases of plants supposed to be caused by fungus growth, as Blight, &c.

All, including wives, sons and daughters, are cordially invited to be present, and to contribute to the exhibition of Fruits, Flowers, Plants and Vegetables, for which ample accommodation will be provided. Those bringing or sending specimens will please notify the undersigned when and how shipped. Efforts will be made to obtain reduced return fare on the railways.

CHARLES Y. LACY,
Secretary.

WISCONSIN HORTICULTURAL SOCIETY.

In accordance with the above notice the Society met at the place named and at 10:30 A. M. the meeting was called to order by Pres. Smith.

The Secretary first made some explanations concerning the programme.

Mr. Harris mentioned the meeting of the Wisconsin Horticultural Society at Tomah this day, and proposed sending a message of greeting.

A motion that the Secretary be directed to send a message of greeting was carried, and the message immediately sent.

DISCUSSION.

The Effects of Last Winter.

This subject was taken up for discussion.

Mr. Wilson. I suffered more last winter than ever before. Lost strawberries that were covered with leaves and straw. Lost also Black-cap Raspberries that had been exposed for years. They killed to the ground. Hardy lilies were killed last winter with ordinary protection.

Mr. Grimes. Had the same experience. Lilies slightly protected are all dead. Wild lilies in the marshes were also killed. My theory is that the winter commenced early and was unusually severe. The thermometer stood 30° below in November. Some plants considered hardy are dead while others considered less hardy came through. The Carnation Cherry is an example of the last, while the Leib is dead to the ground. Trees and plants that ripened up were able to sustain the first cold, but the others were not. Grapes are alive but putting out feebly, and we shall have but little fruit.

Mr. Harris. The destruction was due to the events of the spring. In February there was a severe thunder storm. Then snow fell 2 or 3 feet deep. One week we had a great thaw and then another freeze and the beds were covered with from 3 to 15 inches of ice. I think there was no injury done up to that time. The Philadelphia shortly before that was alive to the tips but afterwards found dead. Strawberries where the ice was deepest suffered least. Roses protected partly with sods but chiefly with coarse litter are dead. One Queen of the Prairie left unprotected is now loaded with buds. Two or three Hybrid Perpetuals unprotected are in good condition. My soil is heavy, some black prairie but mostly clay.

Mr. Elliot. Strawberries are pretty much killed out. Currants are a better crop this year than last.

Mr. Wilson. We can protect against cold but do not know how to protect against a thaw. My soil is sandy loam on gravelly sub-

soil. We must give protection but sometimes we give too much, when we have mild winter with heavy snows.

Mr. Gould. In September there were ten days or two weeks of wet, cold weather, when we wanted it warm and dry, so that grapes even if well protected are subject to rot. Strawberries are, however, as well fit for winter one year as another. Have one bed on a Northern slope and another on a warm exposure. The former will give a good crop, the latter none. Apples matured well last fall for they have blossomed well and set well. I consider the causes of the destruction of plants to have been : First, they were kept growing when they ought to have been ripening, and Second, they were not properly protected.

Mr. Brimhall. My soil is heavy clay. My strawberries on low land where the water stood, froze and were killed. Where the water ran off they are all right. Raspberries on low rich soil were badly injured and are growing feebly. On higher drier land they are all right. Of trees more were injured than ever before. Sour-lards that have stood for ten or twelve years are nearly killed. Some standards counted hardy are growing but are feeble. The Carnation Cherry has generally wintered well until last winter when they were killed. The same is true also of some pear trees. The Duchess (in reply to a question) were badly injured.

Mr. Smith. Strawberries were much injured. Charles Downing stood the best except the Champion. It was done by ice. Grapes never wintered better. Currants came out well, and most apples as well as could be expected. I have a hazel-bush soil for my small fruits. Where my grapes are it is heavier. Of roses I had a few killed, General Washington for one. A few of the Black-cap raspberries killed. The Turner came out perfect though not protected.

Mr. Harris. My Green Prolifics killed out last winter. I think the ice absorbed heat from the plants.

Flowers.

Mr. Wilson. Here is a moss rose that has a peculiarity. The flowers are supposed to be white, but here on the same stem is a pink rose, and on another different colors are found in the same flower. I would like to hear an explanation. Another thing is the transplanting of lily-bulbs. The catalogues say transplant in the fall. I did so, and all were killed, whatever the soil might be. All those bulbs should be transplanted here in the spring. Roses mainly came through well with me, but Baron Provost was killed

with some others. (Mr. Wilson here showed some beautiful roses of several varieties.)

All manure, however well rotted, should never touch the stems, but be dug in around the roots. My man covered roses with manure, because it was easier to obtain, and the next spring they were killed.

Mr. Harris. We all know that manure is filthy, and the worst thing for winter protection, but not for a summer mulch. Flowers sport, and it is not uncommon for flowers to show such variations as those mentioned. Most people say that it is because of their proximity to other kinds. I doubt this. I think it is because the variety is not a *pure* variety; that there is something besides pure white in the blood, so to speak, of that white moss rose. The names of flowers should also have the names of the dealers with them, because otherwise you cannot depend on the names of the flowers being true, and different dealers call the same plant or flower by different names.

Mr. King was called for, but declined to say anything.

Mr. Wilson showed a winter Gladiolus which was a beauty. He said it was perfectly hardy, as it was planted last fall and came up this spring.

Mr. Abernethy. I have been using iron around my bushes, and it has produced a deeper color in foliage and flowers.

Mr. Harris. I have been told of a woman who put around a Geranium on sandy soil leached ashes. This became more thrifty than any of the others. The leaves were twice as large. I would like to know the best season and method of layering to get rose bushes.

Mr. King. The best time is from the first of July till the middle of August. Take cuttings when the wood becomes older.

Mr. Elliot. I layer by twisting the shoots and pegging them down and get very strong layers.

Insects on Currants.

Mr. Elliot proposed to discuss the currant worm. He uses Paris green to destroy it.

Mr. Gould. I use unleached ashes about the roots.

Mr. Elliot. To destroy the borer I prune out and burn the old wood. I have been told of a man that got rid of cut worms by the use of Paris green. I have used it myself for the currant borer, spreading on the ground under the bushes.

Mr. Elliot. (In answer to a question.) The Paris green does

no harm. The currants are so small when it is applied that it is washed off before the fruit is ripe.

Mr. Smith. I practice thorough cleaning of the ground, and have no trouble with the currant worm.

Mr. Harris. I think the application of Green to the ground can do no good, but think its application to the leaves will be effectual with the currant worm.

Training Raspberries.

Mr. Elliot. Is any method of growing raspberries better than to let them grow without training?

Mr. Grimes. I think it is better to head them down and cause them to branch low, and then cover with straw slightly—not much is needed. The best time to head back is just before picking. Cut back to the top of the fruiting canes, then a new and spreading growth will begin.

Fruit Prospects.

Mr. Harris. They appear very slim now for this year.

Mr. Brimhall. I have noticed some puff-balls on some kinds of trees, and have noticed that in such seasons the fruit crop is light.

The Secretary here read a letter from Ernest Meyer, Esq., of St. Peter.

REPORT OF MR. MEYER.

JUNE 18, 1876.

Truman Smith, Esq., St. Paul:

DEAR SIR.—Knowing your disinclination to answer letters I should not attempt the second time to trouble you with a letter, but having received notice of a summer meeting of the State Horticultural Society, to be held at Minneapolis, and not being able to attend, I will state to you a few facts of my experience in raising fruit since we met before. This business looks to me more discouraging now than it has ever done before. Commencing with the apple, I am sorry to say that my whole orchard is going to be ruined this summer by the blight. All the crabs, and many of the other trees are badly affected, and, having commenced so early in the season, I fear that a great many trees will be killed. The same trouble I find through this and adjoining counties. It is now the third time that this disease has appeared among my trees. In raising small fruits I have not succeeded much better. The black-cap raspberries are badly injured, and will not give half a crop; and, as this is the third year in succession that they have

failed, I have made up my mind to throw them aside. I have tried hard to save them by trimming early and covering the tips, but all in vain. They are not the variety for this country. My red varieties—one from my native country, the Philadelphia, and a wild one taken from my woods—came out with the prospect of a full crop. These were killed down last winter, with the exception of the wild one. Can nothing be done to prevent this killing down? My black raspberries are on the east side of my garden, and well protected. Currants and gooseberries have done well with me. I sent you last fall a box of Miner plums, raised in my garden. Do they compare with the description given in circulars of nurserymen? There are not many of them this year. My cherry trees came out in full bloom, but fruit blighted; will give some crop if birds are not too greedy.

I would like very much to be at the meeting in Minneapolis, but in this grasshopper country people have to avoid all unnecessary expenses. We have to buy our bread, and have the prospect of another visit of that insect, for they deposited their eggs within fifty miles from here. Our crops look splendid, and I hope they will not be destroyed. Hoping to hear from you this time, I remain,

Yours Respectfully,

E. MEYER.

Mr. Wilson. What kinds does he refer to? The Brown Thrush and Robin are the worst on strawberries, and the Baltimore Oriole on grapes.

Mr. Harris. I have lost raspberries from a little white grub. I dug up and destroyed the old bushes and planted again beside the old patch. They are now beginning on that side next to the old patch.

Mr. Wilson. Such cases as Mr. Meyer's are simply exceptional and not general.

Small Fruits.

Mr. Perry. I have had some experience with raspberries. I have considered the Doolittle a success for ten years past, and this year it will give the greatest crop I have ever had. I believe that a slight covering of straw to keep off the sun is all that is required. I have had the Davison's Thornless, but it is not so good. But the best of all is the Philadelphia. I have had currants for ten years. The worms cut off the crop, and then I commenced anew and kept the ground clean and had no further trouble. Cherries are doing well. I have 50 trees that are bearing well. I have the best strawberry in Minnesota or the United States. It is the *Coleur de Chair* (Color of Flesh). It is as hardy as the Wilson, larger, and in general superior for family use, but not so firm for shipping. I plant new every third year, setting the plants two feet

apart. Keep clean of weeds, but cut no runners. I have had a sad experience this year. The plants largely killed by a grub.

Mr. Elliot said use lime on the soil. Another recommended salt. He (Mr. P.) had used ashes.

Imperfect Strawberries.

Prof. Morey. I have noticed many deficient strawberries, and would like an explanation.

Mr. Smith. I think it is the dry hot weather.

Mr. Harris. We did not get that down where I live. I think that it is due to hoeing and cutting off the roots, and if this is found where they are not cultivated it is probably due to the work of grubs cutting off the roots.

(It was proposed to read further communications if they were of a more cheerful character, some favoring the reading whatever the character might be. But the discussion was resumed.)

Uncovering Plants.

Mr. Wilson. I would uncover plants when the weather is warm enough to warm them, and not before.

Mr. Gould. I would uncover when there is not much danger of the ground freezing. The fruit can be kept back by leaving the covering on longer; but then it may be left on too long, and the plants will not blossom at all.

Mr. Wilson. The dry winds of April are the trouble about uncovering too early. They take the life out of the plants. It is so with the Montana Verbena and also the Snapdragon.

Mr. Grimes. I find it well not to throw off the covering and expose at once to sun and wind. The best time is a cloudy or cool day, and if a gentle rain is falling it is better still.

Mr. Harris. I let the chickens uncover my strawberries. They do not do it too early. They should not be covered too early in the fall, but only after the ground is frozen. Uncover in cool, cloudy weather. I use straw or tan bark for covering.

Mr. Abernethy. Will shavings do instead of straw?

In reply, it was stated that they are pretty heavy, but if light ones are used they will answer.

Mr. Elliot. I have used them once, and do not want to do so again.

Mr. Gould. Marsh hay is the best covering.

Mr. Chatfield. Pine shavings are injurious to all plants, especially

is the sawdust so. I have used manure with shavings in with injury. I have seen, however, that Mr. Stewart uses them about his peach trees; they keep away mice. I have noticed that wherever water stood the plants were killed last winter.

The Society and the ladies and gentlemen present then repaired to the grove west of the University, where an ample repast, prepared by the ladies of Minneapolis, awaited them.

AFTERNOON SESSION.

PROF. MOREY'S PAPER.

At 2:30 P. M. the meeting was again called to order.

Prof. Charles A. Morey, of Winona, was introduced by the Secretary; and gave his address on "The Nature and Growth of Fungi," at the conclusion of which a vote of thanks was tendered, and a copy requested for publication.

The following is the address in full:

NATURE AND GROWTH OF FUNGI.

All of us recognize the broad distinctions between plants, animals and stones. We see, as did the ancients, that stones grow, that plants grow and live; and that animals grow, live and move. But when we come to study each kingdom closely, we are sometimes confounded by the apparent exceptions to this broad rule. We find minerals which strangely resemble plants, and plants which seem to cross the line and take on the motor powers of an animal. Nothing could puzzle a young student more than the statement that the sponge is an animal. To him, it seems to have all the characteristics of a plant, and no others. However, he can content himself by thinking that *old* students thought so before him; and not only thought so, but tenaciously held to their belief after the more venturesome had announced the classification which now obtains.

This seeming lack of distinctions runs through all science. It eludes precise definition and causes some trouble in fixing terminology; but the student soon comes to understand it, and to accept recognized limits without contradiction. In these modern days, when scientific men are rapidly going over, dissecting, classifying and labeling all the known material in the world, these minutæ of detail upon which the general scientific distinctions are based, are studied with an eagerness that is astonishing. It is a hard matter to find a class of minerals, a family of plants, or a single species of animal to which special and careful study has not been given by somebody. "Men spend their lives," as Carlyle says, "upon a single Greek root;" and

in science the narrow field of a single species is sometimes so broadened by study and comparison that the work of one lifetime only clears the way for an intelligent beginning. It is a curious thought that one day the human mind will find itself out of material. All will have been pushed to the limits beyond which Tyndal vainly attempts to pass, and which he so eloquently described in his Belfast address. Men will understand *how* all matter mingles and combines to produce the objects and phenomena of the universe. Perhaps they will then be able to see *why*. I am afraid they will never be satisfied if they do not.

The student of Botany is very soon brought face to face with the perplexing lack of definite characteristics between the plants he studies. He will even be in doubt many times as to whether a specimen is a flowering, or a non-flowering plant, the broadest distinction in Botany. But these troubles will gradually melt away, as he studies more, and he will learn to recognize points of difference which are only appreciated by the educated eye and mind. It is wonderful to what extent the power of observation may be cultivated. There are a hundred who can talk, to one who can think; but there are many who can think to one who can see. The educational world is just discovering this truth. It is only within a few years that it has been thought necessary for a student to use his eyes for any other purpose than to pore over text-books. It is no wonder that science did not thrive, and that classical studies predominated. But the tide has reached its ebb, and we everywhere see evidences of a strong flow in the right direction. The kindergarten system which twenty years ago would have been thought the height of absurdity, is now liberally employed in teaching target-practice to the young idea. There is an increasing demand for science in our public schools, and an increasing willingness to supply the apparatus with which to illustrate it. In colleges, the reaction is still more marked. We see its effects in the well-stocked laboratories of the university in whose halls we meet to-day. In these laboratories text-books are secondary, while habits of observation are carefully inculcated. Students see the actual conditions of the materials in the different stages of chemical and physical operations, the mere description of which could give but a vague idea.

Fungi have been universally admitted into the vegetable kingdom. Of the two great classes, they belong to the Cryptogamia, or flowerless plants. The ordinary fern, or brake, of the woods, the various forms of moss, and the lichens, also belong to this great class of plants. They are the lowest in their organization of the vegetable kingdom. Many of them have no leaves; some consist of but a single cell. The name is from two Greek words meaning concealed marriage. It was first used by Linnaeus. They are the most difficult plants to study, because of the great variety of structure in the different groups. They are not propagated by seeds, but by small bodies consisting of but a single cell, called spores. On the under side of the leaves of common ferns, along the curled edges, these spores may be found in abundance. The process of fertilization is not yet well understood, but there seems to be nothing like chance in their growth. The same species occur regularly in the same places. A large number of fungi are parasites, i. e. growing upon other plants. Smut in corn, rust upon grain, and the ordinary mould, are examples. A still greater number grow from decaying vegetable matter; others are found upon animal matter, as leather or bone;

and still others select such unpromising soils as gravel, fragments of rocks, or even iron and lead. So far as our present knowledge goes, they are never produced in any other way than from the spores of the same species. These are infinitesimally small. The air is full of them, of all kinds and descriptions. They are deposited everywhere, and are excluded with the greatest difficulty, if indeed, they can be excluded at all.

The mind is like the eye; it can only grasp the middle ground of vision. In that beautiful band of colors, the solar spectrum, there is more heat towards the red, and more chemical power towards the violet end. They extend far outside the visible colors. Light, heat and actinism are all produced by the same kind of waves, differing only in size. Heat and the red are produced by larger waves than actinism and the violet. Green is the medium. The eye recognizes only those wave lengths between and including the red and violet. Outside these the waves are too large or too small to produce the sensation of light.

So with the mind: We can have no definite idea of infinite space or of endless torment. The figures \$1,000,000,000,000 give us no conception of the amount represented. In the opposite direction it is the same. With our powerful microscopes we view wonderfully small things; but it is only a step towards the minute. Rub your hand over a bar of soap and rinse it in a tub of pure water. The whole will take a blue tinge. The color is distinct, but the particles of soap which produce it are far beyond the power of the best microscope. Another experiment will push the question still farther. When a match is burned, a pungent, poisonous gas is produced. It is sulphurous acid. It consists of one part of sulphur vapor by volume, and two parts of oxygen, chemically combined. Light destroys the chemical force, and loosens the two elements. In a dark room fill a large glass tube, having glass ends, with this gas. Through the tube pass a single ray of light from any source. At first, nothing will be seen. The particles of the gases are not large enough to reflect light. At the end of fifteen minutes, a slight bluish tinge will appear, increasing until the particles of sulphur are all released. Now the light began to act upon the compound gas immediately, and the particles of sulphur have been growing for fifteen minutes. But with the best microscope in the world they cannot be seen separately. The mind can form no conception of them when first liberated.

Many experiments have been tried, to prove spontaneous generation. All sorts of solids and liquids have been sealed up and carefully watched for signs of life. They are generally found in the form of some kind of fungous growth, but there is always a doubt about the total exclusion of all germs. Fungi are always rapid in growth, and rapid in decay. In a night a small army of dwarf umbrellas will appear in a door-yard. In as short a time they disappear. They are vastly more important than is generally supposed. We favor their growth as the yeast plant, the vinegar plant, and the mushrooms which we eat; we oppose their growth as smut, rust, potato and timber rot. Many of them are indirectly useful to us in hastening the decay of organic matter. New life is supported at the expense of the old, and together both are returned to the original soil. They are the scavengers among plants. It is not yet proven that such infectious diseases as diphtheria, cholera, &c., are due to growth of fungi. They are frequently present, almost always in diphtheria, but bad cases of both have occurred where no traces of fungi could be found. One thing is certain; the best

preventive of such diseases is absolute cleanliness, both of person and premises. When in the room with a person having diphtheria, the handkerchief should be held over the mouth and nostrils. It will filter the air, keeping out a majority of the spores of the disease.

Very few fungi are eaten in this country. Foods of all kinds are so plenty, that nobody thinks of resorting to "toadstools." During the war they were eaten by soldiers, sick, or tired of army diet. The ordinary mushroom is sometimes found in restaurants in large cities. But of the hundreds of species of edible fungi, some of them making the most delicious dishes known to the gourmand, scarcely half a dozen are ever eaten in the United States. Besides the reason given, there is the other one, of danger from poisoning if a wrong species is selected. One very frequently hears the inquiry, "How can I tell the edible from the poisonous?" There is no brief rule that will fit all cases. The edible species must be learned. We all know the difference between the woodbine and poisonous ivy, aconite and sorrel, nettles and pigweeds; we must become as familiar with the "toadstools" as we are with the weeds. A few general cautions can, however, be given. All fungi having an acrid taste, should be avoided; all those which turn blue when broken, those growing upon wood, and those having a strong, unpleasant odor, are open to suspicion. The common mushroom (*Agaricus campestris*) may be known by the following characteristics: The gills or divisions of the under side, are first pink, then purple. There is a permanent ring or collar around the stem, (see figure,) and the spores are purple.* They may be obtained by cutting off the head of the mushroom and tapping it gently over white paper. Mushrooms must not be sought in woods. The meadow mushroom (*Agaricus arvensis*) is found in open fields and pastures. It is larger than the common mushroom. Enormous quantities of these are eaten in England, France and Germany. In England, also, a species growing underground, called truffles, is much esteemed. In reality most of the fungi which are commonly known are edible. Tons of them are marketed daily in all the large cities of Europe. They are dried for winter use, and are made into ketchup in large quantities. At one establishment in London, twenty tons each week are received from different parts of England and made into ketchup. In times of commercial depression in England, when thousands of men, women and children are out of work, and therefore out of food, truffle hunting and poaching is their last resort. Fields in which they grow have to be guarded as closely as the game preserves. Truffles (*Tuber aestivum*) are found in loose soils, about a foot below the surface. They vary in size from that of a plum to that of a large potato. They are nearly black, with an irregular surface like a blackberry, which they may be said to resemble. The gathering of them gives occupation to many people. Dogs, and sometimes pigs, are trained to find them. These peculiar fungi have a very agreeable flavor, which is not destroyed by cooking in any way. There is another very odd fungus found in Europe, called the "beefsteak fungus" (*Fistulina hepatica*.) It is fleshy, juicy, and looks more like beet root than beefsteak. They are sometimes very large, and they are much esteemed by salad makers.

Beside the use of fungi for food, several of them are useful in materia medica. The most common one is Ergot. This is the diseased condition of the seeds of grains and grasses. Ergot of rye is most commonly used. It

* See Popular Science Monthly for May, 1877.

begins to show itself when the germ is young. The flower itself sometimes mildews, or becomes covered with a whitish coating. A clear, yellowish fluid is exuded, which afterwards hardens and turns gray or black. A large part of the kernel thus formed is a peculiar kind of oil, called oil of Ergot. The spores of this fungus may come from the seed sown, carried to the flower through the juices of the plant. Beside its specific action on the womb, ergot also acts as a sedative, quieting the circulation, and checking hemorrhage. Ergot when taken in large quantities is poisonous. The large spongy puff-ball was formerly used to stop the bleeding of wounds, and also as an anodyne. Surgical operations of considerable importance have been performed under its influence. Many fungi are used medicinally by the Chinese. A fungus called amodou (*Polyporus fomentarius*) is used by the Germans as tinder. It is also cut into slices, dried, beaten until soft and made into warm caps and chest-protectors. The same substance is used as snuff by others. Some of the poisonous fungi are used in making fly and bed bug poisons. Still others are used in staining wood. Taken together, the fungi are the most useful of all the cryptogamous plants. They cannot compare with the ferns in elegance and beauty, nor with the delicacy and brilliancy of the mosses and lichens; but for real utility, (combined, perhaps, with real injury,) they stand next to the flowering plants.

There is so great a variety in the structure of fungi that a description would fill a volume. That of a single species will here suffice. Let us take the mushroom. We at once see three distinct parts; 1. the roots or slender fibers at the base of the plant, called the *mycelium*; 2. the stem and cap, together called the *hymenophore*; and 3. the plates or gills underneath the cap, which bear the *hymenium* or spore-producing surface. The first condition is that of the mycelium, which is a collection of vegetating spores or cells. It is generally found in the form of slender threads, which at certain points become centers of growth. At first there is only a small knob about as large as a mustard seed; but it grows rapidly and other knobs or buds appear at its base. This is the young *hymenophore*. As it comes up through the earth it becomes elongated, and a close examination reveals the position of the future gills. As yet they are only a pair of dark spots on opposite sides of the apex. The edges of the cap are bent down and enclosed in the skin of the plant until it arrives very nearly at maturity. Then the cap expands, breaking the skin and exposing the gills. At the point where the skin is broken from the stem, the collar or ring (see figure) is formed. It is easy to find mushrooms in all these stages of growth. A slice of the stem or cap under the microscope is seen to be made up of slender, tubular cells. The gills are covered with the delicate membrane, or spore-bearing surface, *hymenium*. If spread out upon a flat surface its size would be something astonishing. If the spores be shaken from it as before directed, and examined with the glass, they will be found in groups of four. If the hymenium itself is examined, each spore will be seen upon a slender stem, four of these stems proceeding from a single, thicker stalk, called a *basidium*. The basidia are mingled with other similar stalks, larger, but bearing no stems or spores. They are called *cystidia* (see figure 2.) The function of these latter stalks is not well understood; they are supposed to be the male organs of the plant. When the spores fall off the basidia, others are produced, until the contents of the basidia are exhausted. The largest spores are microscopic, and the smallest are not visible under the best microscope. They

are of various shapes, (see figure 8) all more or less irregular. If the head of a fungus be laid upon a sheet of paper, the gills downward, and left over night, a perfect print will be found in the morning. It shows the great number of the spores, and the facility with which they are given off. The subject of sexual reproduction in these plants is being carefully studied. Few results have yet been obtained.

Of all the edible fungi, only two are cultivated, and one of these but very little. The mushroom is regularly grown for the market all over Europe. Truffles are cultivated with moderate success, and upon a small scale in England only. As an experiment, some fine mushrooms were grown in the following way: Spores were collected and sown upon a pane of glass covered with wet sand. When they began to grow they were transferred to a damp soil in a cellar. The bed was watered with a dilute solution of nitrate of potash, and in a week the plants grew to a fine size. Large quantities of them are grown in caves near Paris. In one there are twenty-one miles of beds, sending 8,000 lbs. to market daily. The temperature is so equal in these caves that the plants grow the year round. It is very easy to cultivate mushrooms, even to an inexperienced person. During the summer let some fine horse manure be collected and mixed with one-third the quantity of sandy soil. Keep it in a place where it will be much trodden if possible. It will heat a little, but the more it is trodden the less it will heat. If it gets above blood heat it must be worked over. The heap must be kept dry, in a shed or hole, and in a short time it will be full of the spawn or *mycelium*. Begin the bed in the cellar or root house by a foundation of strawy manure; then put on the contents of the heap, and over that four inches of rich mold. The whole should be trodden down firmly with the feet, and carefully watered. Smooth it all down with the back of a spade. In a few days the plants will appear. Others besides mushrooms will sometimes come up, and must be removed. As fast as the mature plants are removed, others will appear, and the bed will keep up the crop for several months. It must be kept moist. To all who have eaten these delicious plants, the labor implied in the above description will appear trifling. It will not always succeed. Sometimes the plants will be small and flabby, or covered with warts and mouldy spots. Other fungi are at work upon them, and the whole must be smoothed down for a new trial.

Some of the fungi are very brilliantly colored. From white through all the tints of brown and yellow, purple and red to the deepest black; these are the predominant colors. But there are also occasional blues and greens. The larger number of the colored fungi belong to one genus (*Peziza*.) Nearly all have the peculiar odor of a damp, close cellar; an odor of mouldiness and decay. Some are very fetid, especially when decaying. Most of the fleshy fungi have a peculiar nitrous odor when decaying. It is like a faint sniff of old nitric acid. As before mentioned, many of the poisonous fungi turn blue when bruised or cut. One of the edible species (*Lactarius deliciosus*) changes whenever broken to a dark green. It seems to be filled with an orange-colored fluid which is turned green by the air.

The most striking phenomena connected with fungi, however, are those of luminosity. Every school-boy is familiar with the substance known as "punk," which is nothing but pieces of rotten wood which have been penetrated by the mycelium of certain fungi. The light is due to phosphorescence, and in some varieties is very strong. It is produced by the rapid

combination of organic matter with the oxygen of the air. It is in reality a kind of slow combustion. I have seen the stump of an old tree which gave so much light that it appeared to be actually on fire. Ordinary print could be read by it. Spruce and pine logs frequently are covered by a phosphorescent fungus growing underneath the bark. I once saw a log in a raft which was plainly visible in a dark night, at a considerable distance. The light in all cases is the same, resembling that of the glow worm, or of a match rubbed in the dark.

Of the fungi which by their growth injure growing crops and trees in this country, unfortunately, but little can be said. This branch of botany has been so little studied that the field of knowledge is very limited. It seems to be pretty well established that rust, smut, &c., may be propagated through the seed sown. Care should be taken, for instance, not to sow wheat threshed from musty straw, or to plant corn from fields where smut was prevalent. Rank manures also produce or aggravate rust. There seems to be no other way of regulating the matter in these cases. A wet season always produces more of these fungi than a dry one. This is true of all fungi. There also seems to be close connection between the amount of fungi upon grains and grasses and cattle diseases. The year of the cattle plague in England was one in which more red rust was found than ever before. Graziers, however, seem to think that the rust does not injure cattle. They all agree in saying that in seasons when ergot is plenty, very many cattle slip their young.

The potato rot has been studied more carefully than most of this class of fungi, but the results are very meager. It is known to be due to a certain species of fungi (*Peronospora infestans*); that it also may be produced from diseased seed, and that manuring makes it worse. But no preventive or cure has as yet been devised.

Of mildew, blight, fireblight, and black knot, still less is known. They are being carefully studied by the best botanists of England, and some results may be looked for soon. For ordinary blight and mildew, sulphur has been successfully used. The fireblight so common to crab apple trees in Minnesota is still an unsolved puzzle. A careful study of the branches affected fails to show a single sign of the cause. The fact that it begins at the tip and works downward, as well as the fact that root pruning in a measure stops it, seems to show that the disease is in the circulation of the tree. Almost invariably the roots of affected trees are covered with minute fungi. These are upon small roots near the tips. What it is I am not yet able to say. The best microscope at my command does not show fungi in the branches killed, or in the sap of the tree. In a late paper is an article recommending liquid stable manure for trees affected with any of these diseases. It is to be worked into the soil about the roots freely, and also applied to the trunk of the trees. A farmer in Iowa told me that he saved a few fine trees from it entirely, by sponging them and watering them with strong soap suds. He also said that the black knot upon plum and cherry trees, could be *prevented* by the same treatment. He had a fine plum orchard, of both native and cultivated varieties, and it was singularly free from these unsightly knobs. It is well known that the spawn of most fungi is destroyed by alkaline substances, and it appears that he has made good use of this fact. There is no better preparation for the teeth than pure soap and water. It not only removes

the dirt, but destroys the germs of a fungus which does much to cause decay.

In conclusion, it is to be hoped that students in Botany will hereafter pay more attention to these interesting plants. There is a field for much original investigation and discovery among them. As yet no manual of the fungi of this country has been published. What has been written upon them is scattered through the scientific periodicals and the reports of societies. Dr. Curtiss, of South Carolina, has published the most complete paper, but it is local in character. In the study of these plants, very careful manipulation is needed, and they are preserved with considerable difficulty. Most of them are fleshy and watery, and only a thin slice can be dried so as to show the structure. There is not a creditable collection in this country. Much can be accomplished by careful observation on the part of members of societies like this.

Discussion.

Mr. Wilson mentioned a trouble with his roses, saying that while an inch or two at the end of the branches was alive and nice, below this the leaves were dead.

Prof. Morey replied, that the rose fungus would be visible under a moderate power of glass, while the apple fungus cannot be discovered under any power of the glass.

MR. GRIMES' PAPER.

Mr. Grimes then read his essay on "The Influence of Horticulture in Education," for which a vote of thanks was tendered.

The following is the paper in full:

THE INFLUENCE OF HORTICULTURE IN EDUCATION.

MR. PRESIDENT, LADIES AND GENTLEMEN OF THE STATE HORTICULTURAL SOCIETY: We have a work to do, a mission to fulfill, that will require all the energy and perseverance of which we are capable. Nor will it do for us to halt or even falter until our influence shall cause the public grounds around our institutions of learning to correspond with the culture and refinement taught and exemplified within; nor until every home shall be made a place of beauty and a paradise to its possessor.

Who does not feel the refining influence of flowers? And shall the beauties of the landscape go unheeded? "Behold the lilies of the valley!" "Solomon in all his glory was not arrayed like one of these." I feel when I come into a hall like this, and look upon the flowers that are placed here, fresh from the hand of the Creator, that no human skill can imitate, whose colorings no artist's pencil can draw out, and whose perfumes have not been extracted from this earth, that I am nearer heaven than I was before. Fruits and flowers are said to be immortal, and to constitute one of the highest sources of enjoyment in that city where every horticulturist expects to enter;

while gold (that narrows down the heart of man into pure, sordid selfishness, and creates so much misery, oppression and inhumanity in this lower world,) is only used to pave the streets!

I have always had a passionate fondness for flowers; in fact, I was born immediately after the crowning of the May Queen, with a flower in my hand as well as I can now remember. I think that I must have inherited that fondness from my mother, who kept a flower garden which she cultivated with her own hand, for her own pleasure and that of her friends. It was separated from the front-yard, and also from the vegetable garden, by a nice fence, and nothing was allowed to roam there except the honey bee; in fact, it was kept sacred from everything else—sacred to herself. I was always glad when the weeds would get a little the start, and I should be called in to help subdue them. Her flowers were the handsomest that ever were seen, at least I thought so. I'm speaking now of fifty years ago, before Bliss, Hovey, Washburn or Vick had ever sent out a seed, or the art of hybridizing was known. I remember those old-fashioned flowers with reverence still, and their names are indelibly stamped upon the tablet of my memory. I remember how the beds were laid out and planted. There were her roses, tulips, snowdrops, peonies, lilies, flags, sweet-williams, pinks, bachelor's-buttons, coxcombs, morning glories, china asters, larkspurs, marigolds, holyhocks, chrysanthums, four-o'clocks, forget-me-nots, old-man, thyme and devil-in-the-bush, with snow-balls and lilacs in the background, and a few honest, old-fashioned sun-flowers placed as it were on picket duty around the camp.

We had no botanical names for our plants in those days, and if any one had come to us and asked—Have you the *lilium candiaum* in your ground? We should have said no. *Delphinium*? No. *Centaurea*? No. *Convolvulus*? No. *Heliathus*? No. *Mirabilis*? No. *Tragetes*? No. *Ipo-mea*? No; we have not anything which you have named. And then if they had pointed out those very plants, and told us that they were the identical ones which they had named, we should have doubted their sincerity or sanity; and yet who of us would even now say, that our fathers and mothers were not as wise in their generation as we are in ours? The poet Pope in view of this, once said:

"We think our fathers fools, so wise we grow;
Our wiser sons, no doubt, will think us so."

When I look back upon those old-fashioned flowers, and compare them with the gardens of the present time, and see the improvements that have been made by crossing and hybridizing, thus producing new varieties from seed superceding the old in splendor and glory, together with thousands of new varieties that have been collected throughout all lands, many of which are of great excellence and worth; I feel like Campbell once expressed himself, when looking over the old fields of England, where his feet in boyhood had brushed the early morning dew in search of buttercups and daisies:

"Ye field flowers, the gardens eclipse you 'tis true,
But, ye wildlings of nature, I dote upon you,
For ye waft me to summers of old—
When my heart was filled with fairie delight,
And when daisies and buttercups gladdened my sight
Like treasures of silver and gold."

We must not cast too long a look behind, but with one retrospective glance pass on; the time is short and shall not our hands and minds improve it, shall we not spread the lawn with trees, shrubs and flowering plants, and tell their names, their language and their uses; shall we not labor for the benefit and advancement of the rising generation as others for us, have done before? Let us adorn and beautify our homes and make them pleasing and attractive, and our children will grow up around us contented, virtuous and happy; let us fill our libraries with volumes of useful knowledge and wisdom, honor and blessings will crown our efforts.

Next to the influence and instruction imparted at home comes in the State as the great educator of her people. Her system of schools is made complete, as far as liberal endowments go and it only remains for our legislature to carry out, exemplify and perfect.

We have in operation the common, graded, and normal schools and our State University—all working together in training up the child from the first rudiments of learning to the highest attainments of knowledge. The cause of general education is one that lies very near my heart, but I shall only discuss it at this time in a horticultural point of view.

Books cannot furnish all that we should know, and feel; to educate alike the head, the mind, the heart, is but to rise from nature's study, up to nature's God. There is a benign influence above and around us, that:

"Warms in the sun, refreshes in the breeze,
Glow in the stars, and blossoms in the trees.
Lives through all life, extends through all extent,
Spreads undivided, operates unspent."

Botany is taught in most of the advanced schools of learning in this State, yet how many of those institutions have their collections of plants, as specimens to illustrate its teachings and define its truths? Not one, so far as I know. As well teach astronomy without the aid of the telescope, or theology without the Bible.

But aside from this, plants, and flowers more especially, have a refining influence, that softens down the harsher tendencies of our nature, creates within us nobler and more refining sentiments, instills kindness into our affections, and warms our hearts with true devotion to the interests and welfare of those around us, fitting us to enjoy the social intercourse and friendship of the world. There are many such families in our land, whose sons and daughters have been reared beneath the ennobling and endearing influence of flowers and home, who look upon everything as sacred that has received the touch of a mother's hand, and whose hearts have been moulded to the nicest degree of sensibility and refinement; when they leave home to complete an education, and go to our free institutions of learning, whose bare walls and surroundings are barren of all the beauties of nature, they feel as if they had been thrust out upon the cold charities of a naked world.

Last winter this society visited the Normal School at Winona, by invitation of Prof. Phelps, the official superintendent. We found about three hundred pupils in attendance, of all grades, from the highest, who were nearly ready to receive their diploma, to the lowest who were just beginning. Some of them were boys of but three feet high, whom the State with noble

generosity had taken upon herself to educate in the place of him, the once fond father, who now rests in hallowed memory beneath a soldier's tomb.

Within its walls system and order reigned supreme; whether in the assembly or class room, each one seemed to know his place and work, and all went on as if by some magic rule or mechanism; it seemed as if a wink or nod was understood and with alacrity obeyed, so perfect was the discipline in all its parts; and I felt proud, that these young men and women were to be the future instructors of our children. But when I looked around I thought that something might be lacking still to fit them out, and make them all that we could wish. The grounds are not enclosed, the lawn was but a public square where cows do congregate, without a tree to shade, a plant or shrub to beautify, not even a plat of grass to hide the face of mother earth from view. And this is but *one* example of the whole. Thought I, the pride of this great State lies not in this direction. And what have you better here to adorn this temple of learning, except a few majestic oaks that nature's hand had planted there in her great park, long before the foundation stones of this building were removed from the silent quarry?

Not only have the grounds around our public institutions of learning been neglected, but the wheels of education itself are now clogged for want of the usual and necessary appropriations. Shall we excuse the State? We might as well, it was no free act of hers that did it, but it was done through the neglect of servants. Let the State once educate her children up to a proper standard, and then our representatives would not dare hold back the means as they now do, seeming so willing, yet so slow, for if they then refused to act, it would be well they should know if there is a power behind the throne, and we hold the lever in our hands.

If once the grounds about our State institutions of learning were made what they should be, how soon would the example be followed and carried out by all the other institutions, even down to the common schools in every district of the State, and how much better could the cause of education be maintained where knowledge and beauty are combined. Let us elevate our standards high, and cultivate and educate to all that is noble, pure and good.

If you have no room for trees and shrubs, then let us plant our plat of ground in flowers. I would strew them around with a liberal hand. I would plant beside the humblest cottage of the poor as well as the stately mansion of the rich, in all our cemeteries and public grounds, about our charitable and benevolent institutions, and especially would I plant them purposely at the reform school, to improve the hearts of those little novices in crime, and I would even plant them where they could be seen from within the prison walls.

But some will ask, what benefit have we in the cultivation of flowers? I answer, much every way, socially, morally, and intellectually. Flowers portray the poetry of the heart; they educate to neatness and propriety, and elevate the mind above the common things of earth. Flowers always teach the language of love, and we would not enjoy them alone if we could, we would distribute them among our friends while living, and weave them into wreaths and immortelles to place upon their caskets when the last farewell was said; we would also make them into bouquets to place as incense upon the altars of our devotions, and especially would we give them to the poor to gladden their hearts, and also as mementoes of affection to place

upon the graves of their departed ones; and thus we could rejoice with them that do rejoice, and weep with them that weep.

And now brothers and sisters let us go on to fulfill our mission, learning, ever learning to cultivate the fraternal spirit of love and forbearance toward each, with charity to all. And when the work of the day is all done, and we have laid aside our implements for the night, may we enter that rest prepared for the faithful ones, in the paradise above, where flowers ever bloom, and trees and fruits immortal grow, and where we shall be made welcome,—welcome in the enjoyment and presence of Him, who is the center of attraction, and light of the Celestial City.

DISCUSSION.

State Fair.

Mr. Harris introduced the following :

Resolved, That the State Horticultural Society will put forth its best efforts to assist in making the next State Fair a success.

Mr. Hoag spoke in favor of the resolution, enumerating the advantages enjoyed by the Horticultural Society, and alluding to the efforts of the Agricultural Society to place itself on a good basis. The Secretary made some remarks on the same subject, as did also Prof. Morey.

The resolution was passed without dissent.

Centennial Exhibition.

The Secretary called up the matter of exhibiting fruits at the Centennial Exhibition, and Mr. Harris spoke upon the same subject. Saying that sending even one delegate would be a good thing for the State, and that a delegate could be sent at little expense to the Society.

Mr. Smith moved that credentials be issued to Mr. Grimes and such others as will attend the Exhibition free of expense to the Society. The motion was carried.

The Secretary offered the following :

Resolved, That this Society will exhibit with the Pennsylvania Horticultural Society, and that the committee appointed last winter for the collection of fruits be requested to perform the same services for this purpose.

The resolution was carried.

Thanks to the Ladies.

Mr. Harris offered the following :

Resolved, That we tender the sincere thanks of this Society to the ladies of Minneapolis for their kind reception, and for their presence at our meeting.

The resolution received a unanimous vote.

County Horticultural Societies.

Mr. Scott asked for some action with reference to the organization of County Horticultural Societies. He said it was discovered in Winona last winter that youth and beauty cannot hold their own with the ladies against a knowledge of flowers, and that they would be warm in the support of such societies.

The discussion was continued by Messrs. Scott, Elliot and Harris, the latter saying that the only effective way of organizing such is to send out a lecturer for the purpose. He had thought of doing this himself, but had not found time.

Prof. Winchell introduced the following :

Resolved, That the Secretary and Mr. Scott be a committee to draft a general plan and constitution with by-laws suitable for the organization of County Horticultural Societies, and that they take such measures as may to them seem necessary for the encouragement of such organizations.

The motion was carried.

The Society then adjourned.

PROCEEDINGS
AT THE
WINTER MEETING,

HELD AT OWATONNA, TUESDAY, WEDNESDAY AND THURSDAY,
JANUARY 16, 17 AND 18, 1877.

PROGRAMME.

TUESDAY MORNING.

1. Preliminaries.
2. Discussion.*

TUESDAY AFTERNOON.

1. Announcement of Committees.
2. Paper on Grape Culture, F. G. Gould, Excelsior.
3. Discussion on above.
4. Discussion.*

TUESDAY EVENING.

1. President's Address.
2. Report of Delegates to Centennial Exhibition.
3. Discussion.*

WEDNESDAY MORNING.

1. Essay on Cultivated Plants; influence of cultivation, hybridization, selection of seed, etc., W. T. Scott, Minneapolis.
2. Discussion on above.
3. Revision of Strawberry and Raspberry lists.
4. Discussion.*

ANNUAL REPORT.

WEDNESDAY AFTERNOON.

1. Paper on the Propagation of Trees by Cuttings, L. B. Hodges, St. Paul.
2. Discussion on above.
3. Revision of Currant, Gooseberry and Grape lists.
4. Discussion.*

WEDNESDAY EVENING.

1. Paper on the Laying out, Planting and Care of small Dooryards.
J. E. Booth, Minneapolis.
2. Discussion on above.
3. Paper on "Annuals," Miss Hortense Share, Rosemount.

THURSDAY MORNING.

1. Reports of Secretary and Treasurer.
2. Election of officers, by ballot without nomination.
3. Discussion.*

THURSDAY AFTERNOON.

1. Report of Committee acting with State Agricultural Society.
2. Revision of Apple and Crab-apple lists.
3. Discussion.*

THURSDAY EVENING.

1. Miscellaneous Business.
2. Paper on Blight.
3. Discussion on above.
4. Discussion.*

The following subjects have been proposed for discussion, and may be taken up wherever in the above programme the word "discussion" is distinguished by a star :

1. Orchard Protection.
2. Use of Evergreens.
3. Planting of Streets and Roads.
4. Early Potatoes for Market; varieties, cultivation, etc.
5. The Cranberry; its propagation, cultivation, etc.
6. The Garden Pea; its varieties, cultivation, etc.

The following persons have been invited to prepare papers and reports which may also be substituted where the word "discussion" is marked with a star :

K. N. Giteau, Farmington; Hedges.
Judge L. R. Hawkins, Maple Glen; Dwarf Apple Trees.

F. M. Finch, St. Paul; Cacti.
 R. J. Mendenhall, Minneapolis; Entomology.
 J. S. Harris, LaCrescent; "
 W. Elliot, Minneapolis; "
 Wm. King, St. Paul; Flowers and Floriculture.
 J. T. Grimes, Minneapolis; Vegetables and Market Gardens.
 W. E. Brimhall, St. Paul; Perennial Garden Vegetables.
 M. Pearce, Rochester; Vegetables and Market Gardens.
 E. H. S. Dart, Owatonna; Trees for the Forest, and Forest Culture.
 W. K. Bates, Stockton; Apple Culture.

Reports of General Fruit Committee.

Papers on other subjects or by other parties will also be accepted.

The exhibition of fruits and vegetables has been an interesting feature at former meetings, and it is hoped that all who have new or meritorious specimens will bring them with them.

The citizens of Owatonna will give free entertainment to members of the Society. Members who prefer it, and visitors, will find excellent accommodations at the Arnold House, at the reduced rate of \$1.50 per day.

Efforts will be made to secure the usual reduction in railroad fare.

The annual membership fee of the Society is \$1.00, but all are cordially invited to attend the meeting.

CHAS. Y. LACY, Sec'y,
Minneapolis, Minn.

TUESDAY MORNING.

In accordance with notice given in the public press, and the above programme, the Society met at Chambers' Hall, and was called to order by President Smith at 11 o'clock A. M.

Agricultural Society.

Mr. Dart was called upon to make some remarks, but declined to speak. A letter from J. S. Brockelhurst, Esq., of Princeton, was read, which opened a discussion on the conduct of the State Agricultural Society.

Pres. Smith. No premiums have been paid except to horse-men, and no satisfaction is given by the officers in answer to inquiries.

Mr. Grimes. I was surprised that they took in so much money as they did at the fair. The President told me that the premiums must be paid *pro rata*.

Pres. Smith. It is time we cut loose from the Agricultural So-

ciety, and we had better hold our own exhibitions if we exhibit at all. I think that, if the Society preserves its dignity and reputation, the State would build us an exhibition hall on the grounds of the University, State Reform School or some other suitable place. If we only gave awards of merit, it would pay us in the information we would get, and we might, perhaps, be allowed to sell articles to help pay expenses. We ought to have an exhibition of some kind. It is of more use than all the newspaper puffs. But it is expensive to exhibit with horses and stock. They draw a crowd, but it is doubtful if that kind of a crowd appreciates horticultural productions, except to steal them. A small fee for entrance would be sufficient, as expenses would be light. The Agricultural Society is extravagant in its expenditures.

A motion to adjourn to 2 o'clock P. M. was carried.

TUESDAY AFTERNOON.

COMMITTEES.

The meeting was called to order by the President at 2:30 o'clock P. M.

The first business was the appointment of committees.

Finance Committee.

Messrs. Dart, Grimes and Elliott were appointed a committee to report at this meeting on all bills presented against the Society.

Obituary.

Pres. Smith asked if there had been any deaths of former members of the Society during the year.

Mr. Grimes replied that James Hoffman, formerly of Minneapolis, had died a few weeks since. Mr. Grimes was requested to call the attention of Col. Stevens, of the committee on obituaries, to the fact.

Committee on President's Address.

Messrs. Kenney, Lacy and Brand were appointed such committee.

Committee on Amendments.

The Secretary moved that the President appoint a committee to report on amendments to the constitution and by-laws, to provide for the election of life and honorary members. Motion was carried, and Messrs. Lacy, Dart and Hollister were appointed such committee.

Committee on Articles on Exhibition.

Messrs. Grimes, Brand and Kenney were appointed.

The Committee on Final Resolutions was announced later in the meeting.

GRAPE CULTURE.

A paper on Grape Culture, by F. G. Gould, Esq., of Excelsior, was read by the Secretary, accepted and ordered on file for publication by the Society.

The following is the paper in full:

Introduction.

The cultivation of grapes is attracting more and more attention every year among the people of Minnesota, since the fact has been established that our climate will admit of the growth and ripening of grapes of excellent quality. Where dent corn will ripen, there grapes may be expected to ripen.

Location.

There are many localities where they may be profitably grown. Among the best situations are those near lakes or rivers—lying south or east of them. The early frosts in the fall come with a northwest wind, when the water is not very cold: the air is warmed during its passage over the water sufficiently to prevent any damage to vegetation by freezing for a considerable distance beyond.

Varieties to Plant.

In making a selection of vines to plant, it is better to choose those varieties that are fruitful, healthy and early, than to waste labor on short-lived or unfruitful varieties. This mistake is too often made by beginners, who are led astray by fine specimens of fruit, exhibited perhaps in pickle in a glass jar.

The Delaware and Concord are the universal favorites at present, and are worthy of the position which they enjoy. The Concord is not a fine flavored

grape, but its good size, and fair flavor, earliness, fruitfulness and health of vine entitle it to the first or second place on the list for Minnesota.

The Delaware, a much smaller grape is equal to the very best in flavor, an abundant bearer; fruit begins to ripen before Concord; healthy vine and hardy. This variety bids fair to outstrip the Concord in popular favor.

Starting Plants from Cuttings.

Most varieties of grapes will grow from cuttings without the aid of bottom heat or extra labor. Among the most difficult to start is the Delaware. By following these directions it may be successfully accomplished. Take well ripened wood of one years growth and cut into lengths of 8 to 10 inches so that there will be two buds at least six inches apart on every cutting leaving half an inch at least of wood outside of the buds at the ends of the cuttings, tie them in bundles and cover them with earth or leaves or any other material that will keep them from hard freezing and wetting; take them out in the spring by the 20th or 25th of April and cut the lower ends off in the lower edge of the enlargement or joint at the lower bud; tie in bundles, have the butts even, dig a hole in the ground in some warm corner where the sun will shine (when it shines at all) and stand them in bottom up; pack the earth firmly around them and then cover with about two inches of loose soil or sand. Keep this covering wet by sprinkling on it warm water as often as every other day or oftener. In about ten days or two weeks they ought to be ready to be taken out, if they are, a white line will be seen around or part way round the ends of the cuttings at the junction of the wood and bark; when this stage is reached they had better be taken out and planted in deeply worked, rich, mellow soil. They may be planted with a dibble, the lower ends should be six or seven inches below the surface standing upright or on a slant, they will grow as well one way as the other, one bud at least should be above ground; the soil should be stirred frequently, especially if the weather should be dry.

Setting in Vineyard.

Vines in the vineyard should be at least eight feet apart each way. A stake should be set near each plant to tie to. But one shoot should be allowed to grow the first and second year. The side shoots should be pinched off after they have formed one leaf, and in the fall of the second year two or three feet of the cane may be left at pruning time for fruiting the next year, when a trellis should be made.

Pruning.

The ends of the shoots on bearing vines should be pinched off as soon as the grapes are formed, and this pinching should be followed up persistently in the early and growing part of the season.

A dense mass of foliage is a nuisance on a grape trellis, but to remedy this the leaves should not be removed from bearing canes opposite clusters of grapes or below them.

At the fall pruning the most of the present years growth should be cut away, enough should be left though for the next year's crop of fruit, for the old wood gives no grapes. Pruning should be done between the 15th of October and the 15th of November, say the 1st of November.

Protection.

In two or three days after, the vines may be laid down and covered three to six inches deep with earth, and a few inches in depth of straw or litter over this, will prevent damage by freezing.

They should be taken up and tied to the trellises about the 5th or 10th of May.

F. G. G.

Excelsior, Jan. 18th, 1877.

DISCUSSION.

Depth of Covering.—Propagation.

Mr. Brand. I would like to know if the President approves the depth recommended in the paper?

President Smith. I cover with two or three inches of soil; just enough so that it will not wash off. In the propagation of the Delaware, I use a shorter growth with the buds as close as possible. Last year I made cuttings from the ripest wood, buried them through the winter, and from the 5th to the 10th of May planted in trenches, and tramped the earth solid around the bottoms. I filled the trench till the top bud was just covered, or about level with the surface. I got three feet of growth last year.

Mr. Brand. Is a vine from a cutting as good as from a layer?

President Smith. It makes a better shaped and more healthy vine. Grown from a layer it bears a little sooner. I would cultivate thoroughly or else mulch. Drought often uses up the vines just when they are forming roots.

Mr. Grimes. I prefer cutting at a joint to the proper length, in the fall, and letting them callus through the winter.

President Smith. The Delaware is the best variety, but it is a long time in coming to bearing.

Cultivation.

Mr. Kenney. What implement do you cultivate with?

President Smith. The ground is clean now. In the spring I take up the vines and let lie on the ground till the buds start. I spade over with the spading-fork when the weeds start. Some-

times I spade a second time, but generally use the hoe after the first spading. I take good care to clear off the ground entirely, so that the sun can ripen the fruit in the autumn.

Mr. Kenney. Cannot the horse be used to save manual labor?

President Smith. On level ground, and where the vines are planted deep, it might cheapen the cultivation, but mine are on a side-hill and the land is valuable, so I do not want to leave land to turn the horse upon.

Mr. Grimes. How late do you cultivate?

President Smith. Up to the picking time, if necessary.

Mr. Grimes. Aside from the weeds, how long is it necessary to keep the ground mellow?

President Smith. I keep it loose and mellow up to the time of picking. I prefer ashes and lime for fertilizers to farm-yard manure. I like the potato-hoe for loosening the soil.

Distance.

Mr. Kenney. How far apart do you set?

Pres. Smith. Eight feet each way. If land were plenty, would set ten to twelve feet each way.

Quantity of Fruit.

Mr. Kenney. How much fruit do you allow to each vine?

Pres. Smith. To the Delaware, not more than ten pounds. I have grown fifteen pounds on the Delaware, and twenty-five on the Muscadine. Overbearing injures the crop for the following season. From a certain number of vines I got 3,000 pounds last year; this year only 500 pounds, and no ripe ones.

Messrs. Grimes and Kenney had had similar experience.

Pres. Smith. After fifteen years' experience, I do not want a vine to bear over ten pounds of fruit.

Mr. Dart. Was not the difference in the two years due to difference of season?

Pres. Smith. I have had the same experience several times, and sometimes the Delaware has been killed by overbearing. A Boston grower limits his vines to seven pounds each, and gets the best price in market for these.

Pruning.

Mr. Kenney. What average length of vine do you leave in the fall?

Pres. Smith. I prune according to no rule, but cut according to circumstances. My object is to get strong, healthy wood near the ground. The weaker the vine the closer I cut. Young vines I cut to one or two buds. It requires but little wood to produce ten pounds of fruit. I cut in the fall, and not much in the growing season. I do not aim to get new wood each year. There is only one system of pruning, as laid down in the books, that can be followed where we lay down the vines.

Delaware.

Mr. Kenney. Has the Delaware ripened every year?

Pres. Smith. Every year except one, when wet and cold weather came on when they were beginning to ripen.

Mr. Brand. Do you prefer the Delaware?

Pres. Smith. I can get more money from it because it brings a better price and gives a more uniform yield.

Mr. Kenney. How old must the vines be to bear ten pounds?

Pres. Smith. Five or six, or if weak, eight years old, according to their strength.

Training.

Mr. Kenney. Is there no danger of breaking the vines when taking from the stakes?

Pres. Smith. I do not tie to stakes and tie to trellises obliquely. They will not break if trained right, but you cannot do it according to the book systems without breaking. I always leave more buds in the fall than are required to grow and when they have started I rub part of them out. We cannot grow grapes without labor and expense.

Mr. Brand. How many vines are there in the largest vineyards you know of?

Pres. Smith. Not over 2,000 or 3,000. I have 1,500 and Mr. Miller about the same. I have the Delaware planted twelve years ago. It needs a richer soil than the Concord, and if you leave too much wood and let it get too thick they will mildew.

Mr. Brand. The largest vineyard I have been in contains 1,500 vines and 800 of them are Delaware. This is over on the Minnesota River. The owner considered the Delaware the most profitable.

Soil and Elevation.

Mr. Kenney. It is necessary to be on high dry ground to grow grapes.

Mr. Smith. The ground must be well drained and if it does not contain lime it should be applied. The soil should be worked deeply.

Mr. Hollister. I have grown grapes on level land and without lime. Trained to stakes and cut away the old wood each season on the renewal system. I got 25 to 40 pounds a year from each vine.

Pres. Smith. Mr. Knaupheide grows much on the same plan that I do, but his land is nearer level and he uses a horse more. Mr. Miller grows on about the same plan that I do.

Mr. Hollister. If the ground is rich enough, and the vine strong, you can ripen more than ten pounds per vine?

Pres. Smith. You cannot ripen much more with a good flavor.

Varieties.

Mr. Kenney. Has any one grown Chase's Seedling?

Mr. Brand. That was originated by Mr. Chase, in Iowa, who has since died. Mr. Harris says it is so much like the Israella that it is not worth while to propagate it.

Pres. Smith. I have had a grape on private terms that is very promising. Mr. Sylvester, of Lyons, N. Y., claims that it will keep all winter, till the middle of April. I have not yet fruited it, but probably shall the coming season. If this is true, it will be an acquisition. The Concord must be marketed at once when ripe. Of Roger's Hybrids, No. 6 and No. 9 are good. The Agawam and Salem are also good, but the vines are rank and will mildew. No. 9 is pronounced by some superior to the Delaware, having a larger berry. The Janesville is hardy and early, but the flavor is not agreeable to my customers.

Janesville.

Mr. Hollister. The Janesville is hardy and very early, but the flavor is like that of a grape that has been buried in the ground.

Mr. Grimes. The flavor is not the best, but it is ripe about the time the Concord begins to color.

Mr. Kenney. A gentleman in Iowa whom I know had Champion, and it ripened two weeks earlier than the Hartford Prolific.

Pres. Smith. I want a grape of good quality as well as early ; because, if not of good quality, the Southern grapes coming into market at the same time will take the preference. Our markets demand a good fruit, and if we grow a poor one we come in competition with everything shipped in. I would not recommend the Janesville.

Mr. Brand. Will it make wine?

Pres. Smith. It may ; but it is no object to make poor wine.

Mr. Hollister. It grows with more neglect than any other and has become, therefore, quite a favorite.

Mr. Brand. I invested in a few and in 1872-3 they were all killed root and branch.

Mr. Hollister. I tried to kill mine by leaving them on the trellises all winter and did not succeed.

Mr. Brand. It is not best to recommend a thing because it has one good quality.

Pres. Smith. One groceryman in St. Paul bought the Janesville because he could get it cheap, and he sold them but he sold his customers at the same time. The Ives is also recommended in Ohio but it is not worthy, in my experience. The Iona, if well and carefully propagated, would also be worthy.

Other Varieties.

Mr. Kenney. It is late for our climate.

Pres. Smith. Late and needs extra care but a good keeper. The Eumelan has done poorly with me, but Sylvester claims to have obtained 75 pounds per vine. The Croton did well but the hard winter killed it out. The Lady is the only really good white grape I know of. I have had the Northern Muscadine since 1860. If it did not drop its fruit it would be one of the most profitable. Many of my customers will have it. Taken green it is the best variety we have for jelly. It should be picked for this purpose just when it begins to color.

Mr. Kenney. The flavor is excellent when fully ripe. I found some last year that were left till late and they were most delicious. The vine is very hardy but requires to be covered. None but the Oporto will survive without covering.

Concord and Delaware.

Mr. Brand moved to recommend the Delaware for general cultivation placing it first on the list.

Mr. Hollister. I am in favor of placing the Concord first.

Mr. Dart. So am I, on account of the vigor of the vine and the size of the berry.

The motion was amended so as to read: Recommend the Concord and Delaware for general cultivation. The motion was carried unanimously.

Pres. Smith. I would not recommend others at present, even for trial.

Hartford Prolific and Janesville.

Mr. Kenney. I have grown the Hartford Prolific, fifteen or twenty vines, for seven or eight years. It has done well, the only fault is that the fruit falls from the vine.

Pres. Smith. It is not so good in quality as the Concord, the bunch is loose, and dropping from the stem injures them; but they sold higher, by two or three cents, than the Concord, in the Boston market last year.

Mr. Grimes. Some prefer the Hartford Prolific and some the Concord, and some the Concord to the Delaware, and some like the Northern Muscadine above all others. Tastes differ. I move to recommend the Hartford Prolific for planting in limited quantities.

Mr. Dart. I move an amendment so as to include the Janesville for its earliness.

Mr. Brand. It is not best to recommend any that kills like the Janesville.

Mr. Dart. Its earliness and hardiness are, so far as we know them, sufficient to recommend it; and I believe it is found as profitable as the others.

Mr. Kenney. In the hard winter of 1872-3 I lost no Hartford Prolific or Northern Muscadine.

Motion carried unanimously.

Mr. Hollister. I move that the Janesville be recommended for trial for its earliness.

Motion carried; four for and one against.

It was then moved and carried, that this conclude the grape list.

Mildew.

Mr. Hollister. Are grapes very liable to mildew in Minnesota?

Pres. Smith. Not very; but where too much wood is allowed to grow and the vines become matted on the trellises, during long

spells of rainy weather, and during sudden changes from hot to cold nights, the Ives, Iona, Roger's Hybrids, and some others, are liable to be attacked.

Mr. Hollister. I have had mildew with vines on trellises, but none with them on stakes.

Pres. Smith. How long did you leave the vine in the fall?

Mr. Hollister. I had the stakes five feet above the ground and let the vine grow to the top, and then pinched off the end and the laterals.

Pres. Smith. It is important to attend to the laterals, but do not pull out the lateral buds.

Mr. Dart. I move that when we adjourn we adjourn to meet at 7 o'clock this evening.

Motion carried.

REPORT OF O. D. STORRS.

The report of O. D. Storrs, Esq., of Winsted Lake, of the General Fruit Committee, was then read and ordered on file for publication. The following is the paper in full:

WINSTED LAKE, McLEOD Co., MINN., June 24th, 1876.

Prof. C. Y. Lacy:

DEAR SIR:—As I cannot meet with you the 28th inst., I append the following report:

Insect Enemies.

Since my report for 1875, several varieties of insects have made their appearance. A small green louse that appears on the under side of the leaf, which causes the leaf to curl up. Many apple trees are covered with them and they seem to be on the increase. The borers are more numerous this season than ever before, doing much damage to orchards not under cultivation. Worms are very numerous on newly set trees and even on trees that have been set for years; if not attended to and kept off will eat the leaves entirely off, especially from trees planted this spring.

No insects on ornamental trees. Small fruits not infested.

Strawberries.

The Wilson is the principal variety cultivated. Crop fair; berries smaller than previous years.

Gooseberries.

But few Gooseberries cultivated. I have a Swedish Gooseberry that is hardy and the berries very large.

Raspberries.

Doolittle Blackcap, Seneca and Mammoth Cluster are the varieties in cultivation. Doolittle and Seneca stood the winter best, the Mammoth Cluster badly injured; canes killed down to the ground but sprouting again from the root. Fruit, none; Doolittle, half crop.

Currants.

Red Dutch, White Dutch, White Grape, Cherry and Black Naples are the varieties cultivated. I would recommend the Red Dutch and White Grape. The Cherry Currant is a large fine berry but does not bear well. White Dutch are good bearers, but the branches are inclined to grow too much on the ground, the fruit gets covered with dirt and grit. Crop large; currant worms, none.

Grapes.

There have been more Grapes planted the past spring than ever before. Concord and Delaware are the principal varieties planted. I have the Concord, Delaware, Moffats, Clinton, and two new seedlings that prove to be very hardy, not in bearing. I consider the Concord and Delaware the best, Moffats the hardiest and largest. Prospect of crop fair.

Crop of last year, '75, badly injured by wet weather.

Plums.

The plum crop will be light this season. Trees wintered well and blossomed full, but the fruit has nearly all dropped. The curculio is very bad this season; none on the Miner. Native plums are generally cultivated. I have Harrison's Peach, Trask's Native and Newton's Egg, with several other choice natives. Miner wintered well; prospect for fair crop.

Evergreens.

I have had good success with evergreens. The varieties I have planted are: Spruce, American and Norway, Balsam Fir, Arborvitæ, Scotch Pine, White Pine, Prostrate and Savin Juniper; all doing well and making fine growth. Larch is the hardest tree to make live of any variety I have attempted to grow. I have procured European Larch from the nurseries several years in succession, and never had one to live, until last fall I was at the nurseries of Mr. Grimes and A. Stewart and procured more Larch; brought them home and buried them in the same manner I did apple trees. This spring planted early, and three out of twelve are growing.

Apples.

But few varieties of the Apple show any signs of health. Wealthy, Winsted Pippin, Tetofsky and Duchess are the hardiest. Haas, Russian August and Fameuse are second hardy. The Haas are badly injured in the forks.

Price's Sweet, White Astrachan and Peach Apple I have not tested enough to report their condition, although they came through last winter in good condition, and all came through in the best condition except a few that root killed. No blight.

Crab-Apples.

I have a great variety of crabs. The Transcendent, Hyslop, Hebron, Early Strawberry, Minnesota, Orange Crab, Conical, Beecher's Sweet, Hesper Blush, Stewart's Sweet and Honey Sweet, are among the best for general cultivation. Stewart's Sweet proves to be perfectly hardy and a good bearer. My trees at this time are loaded with fruit. I would not dispense with Stewart's Sweet any sooner than I would with the Transcendent. The prospect for a full crop of apples is good; many trees bending to the ground under their load of fruit. I have the Wealthy in bearing for the first time; trees set two years, three years old when set; been cultivated with corn each year since planted. I believe in good cultivation with some hoed crop.

Deep and Shallow Planting.

I wish to give my experience in deep and shallow planting. Four years ago I planted out a lot of trees, some in the following manner: I dug a hole about five feet in diameter about $2\frac{1}{2}$ feet deep; filled in the top soil to within one foot of top and set the tree in and filled around with mellow soil, so that when the tree was planted it was from ten inches to one foot deeper than it stood in the nursery. The trees planted in this manner are doing well; never one of them has root-killed; not affected by drouth or heavy winds.

I planted some six inches, and others four inches deeper than they stood in nursery. The shallow planted trees are nearly all dead. The trees planted six inches deep are doing a little better, but not in a healthy condition. My soil is a clay loam, with heavy clay subsoil, and yet I shall in the future plant my trees from ten to twelve inches deep. The roots, then, are below the dry surface, and heavy winds do not sway the tree to and fro and loosen the roots or let the air in to dry the roots. I have put well-rotted manure in the bottom of the hole before planting, and covered with eight or ten inches of top soil. These are also doing well.

Flowers.

The past winter proved the hardest on roots and shrubs I have seen in Minnesota. Perennials that I considered hardy were entirely killed. Peonies, Pinks, Sweet Williams, Pansies, Dycentra and Lilies came through all right. Of roses, I lost some of my choicest varieties. Larene, Madame Elliot, Baron Provost and Leon-des-Combat were entirely killed. Bour Sault, African R., Cabbage Rose, Damask, a blush June rose, and a variegated rose, the name I do not know, all wintered well.

I will mention a few Annuals that should have a place in every garden and yard: Phlox, Verbena, Portulacca, Zinnia, Petunia, Ten-week's-stock and

Balsams. I might mention many other varieties that might and ought to be cultivated in every garden. I love flowers and could hardly keep house without them.

O. D. STORRS.

DISCUSSION.

Larches.

Mr. Hollister. I disapprove of what is there said about the Larch. Treated in the right way there is no trouble with it. It starts to grow very early and must therefore be planted early. I have planted 1,000 each year for several years and lost not over five in a thousand.

Mr. Dart. I agree with Mr. Hollister. There is no trouble if the planting is done in time. It is an excellent tree. Can get almost as large trees as of the cottonwood.

Mr. Grimes explained why his (Storrs') trees did not live. They were planted too late in the spring or else got too late in the fall to be removed successfully.

REPORT OF G. W. FULLER.

The Report of Geo. W. Fuller, Esq., of Litchfield, of the General Fruit Committee, dated January 15th was read and ordered on file for publication.

The following is the report in full:

LITCHFIELD, Jan. 15.

C. Y. Lacy, Sec. Minn. S. H. Society:

Apples.

DEAR SIR:—The past year has been very favorable for all kinds of fruit in this part of the State. The most of the trees bearing are the Transcendent, some Hyslop and a few Duchess just beginning to bear. Also a few Early Strawberry, Beecher Sweet and Minnesota Crabs, and I know of one Peach Apple tree which fruited last year. This tree seems about as hardy as the Duchess. The Wealthy I have had but two years, but thus far it does well. Stewart's Sweet has stood three years on my grounds and seems perfectly hardy but is slow in fruiting.

Are there two kinds of Duchess Apple? We have two apples decidedly different in size and color if not in quality under that name.

Blight and Insects.

The Blight has shown itself a little on the Transcendents and Hyslops.

The "flat headed borer" has begun his work on our apple trees, and last spring I found a good many small limbs with a small hole bored in, usually beginning in a crotch of the limb, running down from three to six inches, in which was a small grub. It was evidently his bed for the winter. I did not succeed in catching the fellow after his change in the spring.

The "Canker Worm" appeared quite thickly on our currants and gooseberries last spring. Some tried White Hellebore with indifferent success. The most effectual remedy I found to be a preparation of lime and sulphur as recommended in the transactions of the Illinois Hor. Soc. (Can give you this recipe if wished.)

Effects of Last Winter.

The winter of 75-6 was very hard on the roots of all trees. The previous summer and fall were very dry, and there was but little moisture in the ground when it froze up without snow. All fruit trees not thoroughly mulched were more or less injured, or entirely killed.

Evergreens.

The Balsam Fir, Scotch and Austrian and White Pines, are my best evergreens. Norway Spruce does well, except its sun-burning in the spring. The Austrian Pine does remarkably well with me thus far.

Respectfully,

G. W. FULLER.

P. S. I am sorry I cannot be with you, but circumstances forbid.

ANOTHER REPORT FROM MR. FULLER.

The report of Mr. Fuller, dated June, 1876, was also read and ordered on file for publication.

The following is the report in full:

LITCHFIELD, June 27th, 1876.

PROF. LACY: Your notice of the summer meeting of our Horticultural Society came duly to hand. I am sorry I cannot be present, but business forbids.

Effects of Last Winter.

Last winter was very hard on the roots of trees in my grounds, owing to the exceeding dryness of the soil last fall. All young trees that were not mulched were root killed. But everything well mulched came out nicely and is doing well.

Small Fruits.

Currants and gooseberries and raspberries—Doolittle and Philadelphia—

are full of fruit, but the "currant worm" has found its way here and is at work.

Pears.

A few days since I was in an orchard about 15 miles northwest of this, and was surprised to find a Flemish Beauty pear tree, which I sold to the gentleman four years ago this spring, alive and doing well. I did not suppose such a tree in the State that has lived through these four past winters.

Insects.

I find some kind of insect boring into the small crotches near the ends of the limbs of my apple trees. This was evidently done last fall, and the fellow hatched out very early in the spring, as it was only very early that I found him at home. What are these fellows?

I trust you will have a pleasant and profitable meeting.

Respectfully yours,

G. W. FULLER,
Litchfield, Minn.

DISCUSSION.

Peach Apple.

Mr. Brand. Does any one here know about the hardness of the Peach apple?

Pres. Smith. Mr. Martelli has it, and recommends it.

Two Kinds of Duchess.

Mr. Kenney. I should like to know if there are two kinds of Duchess?

Mr. Brand. I have seventeen trees of the Duchess, on two of which the fruit is much darker than on the others. A neighbor has some that show the same differences, but there is no difference in flavor. Those trees with the darker apples are not so thrifty as the others; they are trained higher, and four years ago they were somewhat injured but not badly. I think this makes the difference.

Pres. Smith. Among my Duchess there are some with the fruit of a different texture from the others.

The Secretary suggested that the stock may have something to do with these differences, and this view was supported by others present.

Mr. Hollister mentioned others who held the same view. Have seen similar differences in the Snow apple.

REPORT OF MR. BOXELL.

The report of J. W. Boxell, Esq., of the General Fruit Committee, was read by the Secretary and ordered on file for publication. The following is the report in full :

AFTON, Washington Co., Jan. 10, 1877.

Prof. C. Y. Lacy :

I send a brief report for the meeting at Owatonna next Tuesday, which I regret I cannot attend.

The Past Crop.

The fruit crop in this county was good, with the exception of the strawberry crop, which fell short, I think, nearly one-half. The currant crop was excellent. The raspberry crop up to the usual average, or perhaps above it. Grapes, I believe, generally did well and ripened well. An unusual number of young plums were blasted, puffing out to the size of a man's thumb, yet the crop was a fair one. Apple trees, crabs and hybrids were loaded with fruit.

Strawberries—Wilson and Charles Downing.

Among strawberries, the Wilson and Charles Downing are the most popular here. The Charles Downing is not so great a bearer as the Wilson, but the berries are somewhat larger and of more uniform size through the season; they are less harsh and acid than the Wilson, and most persons will pay a little more for them by the quart. The plants cover the ground well, and stand the winter well, and a patch that I planted in 1878 shows no signs of running out yet. The Charles Downing has failed almost with me, on very rich soil, and I know of several such instances. On a light or somewhat sandy soil in good condition the crop in this vicinity has always been a fair one.

Currants.

The red Dutch currant is the most reliable and profitable, as none but red currants can be sold in large quantities. Next, a few white grape or white Dutch currants, for variety; and the black Naples currant should not be forgotten. Though hardly eatable from the bushes, they make the best of jam, and when canned, or kept in sealed jugs till spring, they make the richest of pies.

Raspberries.

I have spoken of the raspberry crop as a large one. My own black

raspberries were an exception. They suffered worse last winter than ever before—Doolittles, Senecas, Mammoth Clusters and Davison's Thornless. They were all so badly winter-killed, that I had not much over a third of a crop. With this exception, the Doolittle and Seneca, have never failed with me. The ground being nearly bare of snow much of the time, I think, explains the matter. Several rows of the Doolittle, with plenty of snow drifted among them, came out much better. My red raspberries all wintered through well. Even the Clarke, too tender for our winters generally, came through without injury, and bore a fine crop. The Turner and Kirtland are thoroughly iron-clad. The Kirtland is not very prolific, yet a few are desirable on account of earliness.

The Turner.

The Turner, for delicious flavor of fruit, is the king of red raspberries. Though very prolific, a single picking will not equal a picking of the Philadelphia, yet the bearing season of the Turner is very long. The Turner raspberry throws up a great number of young plants from the lateral roots in the fall, which winter over. Even tender plants, from six to ten inches high, set out in June, will throw up many plants the same season, that will winter over. In fact they spread so rapidly, and are so very hardy, that they will soon become too thick and the berries will be small, unless they are properly thinned and cultivated.

The Philadelphia.

The Philadelphia raspberry has always done well with me. The tops kill down some, every winter. After the buds start in the spring, I cut off all dead tips and cut off all dead wood, and cultivate. I planted my first Philadelphia in the spring of 1871, and they have borne a good crop every year since. This little patch is on a slope facing the west, and exposed to the northwest wind. My other Philadelphias are on level land, and in the lowest spots and little depressions they winter-kill most. I may mention that they have been injured most during the mildest winters. The cold winters of 1872-3 and 1874-5 did not injure them. As I have seen much complaint of the winter-killing of the Philadelphia raspberry, I will mention that for four years, including 1876, my lowest yield was over 2,200 quarts, my highest over 2,800 quarts, per acre. The flavor of the Philadelphia is by no means equal to the Turner.

Grapes.

Grapes are not so largely cultivated in Washington county as strawberries and raspberries, yet many are doing well, on a small scale, with Concords, Delawares and Clintons.

"Black Knot."

A word as to the contagion of "black knot" in Plum trees. Eight or ten years ago my children planted a dozen or more Plum trees in and around a

native cluster left in clearing the land. This native cluster bore good plums, but was badly affected with black knot. My sons cut all the tops entirely from these trees, and burnt them. They also dug the dirt away from the roots and left them exposed for some time; then put a considerable quantity of fresh ashes, sulphur and salt about the roots of each tree and replaced the dirt. They soon had fine tops again, but the black knot was as bad as ever. They are still standing, but ruined and worthless. The trees planted in and around this cluster are now large, and bear fine fruit, and although their roots and branches intertwine or interlock with the diseased trees and touch them in many places, not one of these trees brought from a healthy cluster has a particle of black knot.

DISCUSSION.

Raspberries.—Varieties.

Mr. Kenney. In the spring of 1873 my Philadelphias were badly killed. Last spring they were killed again, after they had started to grow.

Pres. Smith. I have had a similar experience. They were killed in 1873, and again last spring. Before this they had been considered tolerably hardy, but not so hardy as the Turner. The Turner is the hardiest raspberry.

Mr. Kenney. I fruited the Turner last summer for the first time. It is very hardy; has a long bearing season and large berries. I am very favorably impressed with it.

Pres. Smith. The suckers of the Turner must be kept out in order to get a crop of fruit.

Mr. Brand. The Turner has another good point: it is nearly thornless. The Philadelphia is hardier, however, than any black-cap raspberry.

Insects in Canes.

Pres. Smith. In the Turner, Philadelphia, Kirtland and Clarke I found last spring the burrow of a grub, which appeared to kill the cane above it.

Mr. Brand. I have found spots on the canes two or three inches long, which were punctured with numerous small holes, in each of which there was a grub.

Raspberries—Blackcaps.

Mr. Kenney. The Doolittle and the Seneca are the best of

the blackcaps. Some like the Mammoth Cluster, but it is too tender. The Seneca is the richest flavored blackcap.

Pres. Smith. I think the Ontario has an equally good fruit, and is about the same as to hardness.

Other Insects, and Remedies.

Mr. Kenney asked concerning certain insects, especially the lice on tender shoots of apple trees.

Mr. Brand. Mr. Barry's receipt is tobacco-water, dipping the branches into it.

Pres. Smith. A solution of soap-suds is an effectual remedy for most insects. It fixes the Tent Caterpillar.

Mr. Hollister. Is the term "Canker Worm," applied to the "Currant Worm," correct?

It was decided not.

Plant Lice.

The Natural History of the aphides or plant lice was here discussed, relating to which the following is copied from "Harris' Insects Injurious to Vegetation:"

"The winged plant lice provide for a succession of their race by stocking the plants with eggs in the autumn, as before stated. These are hatched in due time in the spring, and the young lice immediately begin to pump up sap from the tender leaves and shoots, increase rapidly in size, and in a short time come to maturity. In this state, it is found that the brood, without a single exception, consists wholly of females, which are wingless, but are in a condition immediately to continue their kind. Their young, however, are not hatched from eggs, but are produced alive, and each female may be the mother of fifteen or twenty young lice in the course of a single day. The plant lice of this second generation are also wingless females, which grow up and have their young in due time; and thus brood after brood is produced, even to the seventh generation or more, without the appearance or intervention, throughout the whole season of a single male. This extraordinary kind of propagation ends in the autumn with the birth of a brood of males and females, which in due time acquire wings and pair; eggs are then laid by these females, and with the death of these winged individuals, which soon follows, the race becomes extinct for the season."

Ants.

Mr. Sias. Are ants friends or foes to the horticulturist?

Mr. Dart. When they loosen up the ground into a mound they may do injury, but I think not in any other way.

Mr. Sias. Do they affect the blight? I had one Transcendent, among others, that did not blight, and this was covered with ants. I could see no other reason for this difference.

Mr. Dart. I think it was because they checked the flow of sap, by loosening up the soil around the roots, thus favoring the drying of the soil.

Adjourned to meet at 7 o'clock P. M.

TUESDAY EVENING.

THE ADDRESS OF PRESIDENT SMITH.

The meeting was called to order by the President at 7:30.

The regular programme was proceeded with, the President's Address coming first. It was accepted and ordered on file for publication.

The following is the address in full:

Ladies and Gentlemen, Members of the

Minnesota State Horticultural Society:

Since our last annual meeting, the centennial year of this great republic has passed, never to return to any of us now living. A year of pleasure and profit to very many, and a year of sorrow and loss to some, I have no doubt, and a year in which *all* have had occasion to pause and take a look at the past, and to note the progress and improvement, not only within the United States of America, but to glance over the whole civilized world, and compare notes with them, and see the advance and improvement made within the last one hundred years. And in so doing, shall we find that horticulture and horticultural improvements have kept pace with other arts and sciences? In answer to this, the report from the able delegates of this Society at the Great Centennial Exhibition and meeting of the American Pomological Society's reunion, will be much more instructive and satisfactory than anything which I can say on this subject. But while the Centennial Exhibition is supposed to show the improvements and progress of one hundred years, we here in Minnesota, and especially the horticulturists, have not had one-sixth of that time to prepare and start for the race and competition with the whole world, and yet our State Horticultural Society, only in its tenth year of existence, in this cold, dry climate, where they say neither fruit nor corn can be grown, have, through the energy, pluck and perseverance, under difficulties, and at the individual expense, of such men as Wyman Elliot, J. T.

Grimes, J. S. Harris, John Hart, Norman Buck, and many other members of our State Horticultural Society, been enabled, not only to secure mention and attract special notice at the exhibition, but to be one of only six or eight horticultural societies to receive an award of a medal on apples, as reported among the lists of awards given in January number, 1877, of *Gardeners' Monthly* and *Horticulturist*, and this, too, without State aid for collecting and paying expenses of such exhibition. While other States' societies had not only years the start of us in fruit culture, besides the advantages they claim as to climate and soil, added to which most of them had liberal State aid or appropriations from legislatures, shall we not justly feel proud of our humble efforts under such adverse circumstances, and may we not well feel encouraged to persevere and "try, try again" in the future; hoping that when the next Centennial Exhibition shall come around, that the Minnesota State Horticultural Society may so have made itself known, and its influence so felt for the good of the public, that the State Legislature of 1876 will not fail to make a small appropriation to assist in making the best and fullest display of fruits possible for her to make. Although you may think this is looking far into the future, is not the future what we are working for?—not the past. And in what manner can we better work for the future, and be likely to be known and honored years hence, than by helping to aid the State and its future residents to have a full supply of the very best fruits, flowers and vegetables? What better fortune can we leave to follow after us than the knowledge of how to most successfully grow horticultural products in the State of Minnesota, and what will best succeed therein? When we consider the immense advantage to ourselves and the State at large our experience and experiments have been in the last ten years, what shall we not gain if we only do our whole duty, and work with a will and with an eye single to the best interest of the citizens of the whole State? and give all to understand, so that we shall not be misunderstood, that the Minnesota State Horticultural Society is not the place to bring any axes to grind. We are not in that business. Neither is it to be run in the interest of a few nurserymen, but on the broad principle of justice to all; and while we do not propose to run it in the interest of any one class, we hope to aid all honest efforts of our nurserymen to supply all citizens of our State with trees and plants suitable for our climate and soil, and by helping to teach the masses how to plant and care for them, so that they may grow and produce fruit profitably; and thereby increase the business and profits of our nurserymen, and help to keep the money in the State that is now paid out to foreign nurserymen and tree-pedlars—at the same time help the producers to get value received for money paid, and obtain trees and plants that will be of some use to them.

Such is my idea of a few of the labors of our Society and what it owes the public, and believing that when it becomes known that such is our object and aim, the public will help and sustain us in our humble efforts until every school house in our State shall have its shade and ornamental trees and its flower garden, and until every farm and village lot shall have its shade, ornamental trees and shrubs, flowers and vegetables, and plenty

of them, and we can all live like sensible beings and in a manner that will elevate and enlighten us and bring us nearer to nature, and nature's laws, and nature's God. I cannot close this hasty address without a reference to our late State Fair, which was called a failure, and so it was, as far as dollars and cents were concerned, to all except those inside the ring, if I may be so allowed to speak. No doubt the Fair was set too late in the season, and I think all Horticulturists will agree with me, that in this State, October is too late to have a successful State Fair as a general rule, but I must compliment the Society upon the display made last fall under such adverse circumstances and lateness of the season, and too much praise cannot be given to such men as John S. Harris and Bates & Son, W. E. Brimhall, Moulton & Co., and many others for their magnificent display of apples, and Rudolph Knaupheide, F. G. Gould, Eggleston and others for equally as fine a display of grapes, and to J. C. Fleischer, State Reform School, and others for display of flowers, and for which they deserve the especial thanks of this Society, considering the extreme weather and risk that they run of losing all on exhibition by frost; then the display of vegetables and other Horticultural products, including display of home grown seeds by Busch, Hollister & Co., was enormous and would compare favorably with those of older States; and the display from our northern county of Mille Lacs by J. S. Brockelhurst, deserves especial mention, and I must say did credit to himself and county he represents, and how much would it have made the hearts of those men and women glad, and how much would it have encouraged them to try again to do as well, or better, if they could have received the small premiums offered and so honestly earned, and not have been told by the President of the State Agricultural Society that we were exhibiting under the National Rules of the Trotting Association and the purses offered for fast horses and base ball must all be paid whether the Society paid expenses or not.

Now, I for one would have been satisfied if the affairs had been properly and economically managed, to say nothing more, and then, after paying all just and honest expenses, have divided the balance, whatever that amount might have been, *pro rata*, among those who were awarded premiums; and I think all reasonable persons would have been perfectly satisfied with such a result fairly made, even had it not have paid 10 cents on the dollar. Now is it not a proper time for us to commence a new deal, as the boys say, and have a change of some kind in our fall exhibitions, as we begin on the new century of our common country? Can we not devise some plan for an exhibition or fair to be run by the horticultural, farming and mechanical and other interests of our State, that will turn special purses and pool selling and things of this kind, under National rules, out of the list, and each bear its share of the expense and receive each its share of the profits, if any there should be. I merely throw this out as a suggestion, hoping it may have the attention of this body, if it deserves any, and not without, as I have no ax to grind, and do not propose to help grind one for any one else; and believe me as ever devoted and willing to join hands in any and all plans that I can

see will be for the best interest of Minnesota Horticultural Society and Minnesota horticulturists.

PAPER ON APPLE CULTURE.

The report of the delegates to the Centennial Exhibition, J. T. Grimes, Esq., chairman, came next on the programme, but his colleague, Mr. Elliot, being absent, the report was deferred till the following forenoon, and a paper on Apple Culture, by W. K. Bates, Esq., was read and ordered on file for publication.

The following is the paper in full :

C. Y. Lacy, Secretary Horticultural Society :

Seeing by the programme for winter meeting, received last evening, that I was assigned "Apple Culture," I will try to tell what little I know about it. First, I would say if you are a stranger in our State, see to it well that you have a proper selection of site, soil, and hardy varieties of trees.

Site.

First, for orchard site I would choose an eastern or northeastern exposure. Or, in other words, where a site could be chosen and not have it raked by our southwest, west and northwest winds. The southwest wind is most to be dreaded, as it is too warm in late winter and early spring, and causes the sap to start too early. If our farms do not contain such a location, we must do the next best thing, and that is, to protect our orchards by an evergreen belt of the best of evergreens, the Norway Spruce and the White Pine.

Soil.

2d. For a soil, I would select a clay soil; or, at least, a soil with clay subsoil.

Varieties.

3d. In regard to selecting varieties, I may say our State Horticultural Society furnish us yearly a digest of all that seem to do well in our different localities. But in this part of the State bordering on the rivers and valleys there are varieties that may not do as well back in the prairie counties, but can be planted here and prove profitable. Amongst these I may mention Duchess, Fameuse, Wealthy, Utter's Red, Jefferson Co., Haas, St. Lawrence, Tetofsky, Plumb's Cider, Saxton, Seek-no-further, and some others. All the above are common apples, and I may say that in all our old orchards, set out in an early day, by the sales of Mr. N. Stevens and A. W. Sias to our early settlers, none has given such returns in real cash as the Fameuse. It has

stood the blast, and in our markets finds ready sales. Trees last fall bringing in \$12.00 to \$15.00 per tree, or at the rate of \$1,200 to \$1,500 per acre, as much as an acre of wheat in a lifetime; and to our members I can say, what a return in golden fruit after our watching, working and waitings; and if one variety can do as well, what will be the result when that superb of apples, the Wealthy, comes into bearing. We raised some of this last fall of '76, and were more than pleased with it. But I am digressing, and I would still further say we have our Siberian family to fall back on. All good, and I think the day not far distant when they will be bettered by being hybridized, so that they will not be met in the markets as crabs.

Planting, Training and Pruning.

4th. I prefer low headed trees. Buy them in the fall and heel them in with proper care and set them in spring about the time the Oaks are putting forth their leaves and not earlier is my rule, as the tree will start and not stand still and be dried by the cold spring winds.

In setting I dig out a hole large enough for the roots without cramping them and deep enough to set the tree 6 to 9 inches deeper than it stood in nursery row, and on sandy soils I set twelve to fifteen inches deep, and after setting I generally mulch with rotten straw and cover it with little earth to hold the mulch in place. After planting I cut back a portion of the top of each tree to help form a better head and balance the loss of roots. But in after pruning I prune but little, and go most decidedly against seeding down orchards to timothy-grass.

Plant the ground to hoed crops or buckwheat. In closing I can say our county again redeemed herself by a large apple crop, several parties having some 200 or more bushels. There was a glut of Crab-apples in our markets, but a large amount were made up into cider with good returns.

Other Fruits.

A large crop of Raspberries, Strawberries and Currants, with those that had plants. My trial of Prouty's Seedling Strawberry and Janesville Grape were of such a good success I would recommend them to all. One of my neighbors raised with common bed culture four bushels of Strawberries to the rod of ground or at the rate of 640 bushels to the acre at 10c. per quart would net him \$2,048.00 per acre. I mention this to show what can be done in Minnesota.

Hoping you may have a good meeting and being circumstanced so that I cannot attend by being hurt, I remain,

Yours truly,

W. K. BATES.

STOCKTON, MINN., Jany. 12th, '77.

DISCUSSION.

Deep Planting.

Mr. Hollister. Deep planting has been mentioned twice, and as it is contrary to the laws of vegetable physiology, I would like to hear it explained.

Mr. Jewell. There are two reasons for deep planting. The trees are less affected by winds, and get more moisture. They get hardier roots by the formation of a new set above the root grafted on. There are only two ways to get hardy roots: one is to set deep, and the other to graft on crab-roots. The latter is seldom done, and the former is most practicable; but you lose by it about half a year's growth, because the tree does not start quite so soon.

Pres. Smith. Is not a slow growth preferable for Minnesota?

Mr. Jewell. If the tree is hardy, the more rapid the growth the better for the owner. A moderate growth for the half hardy kinds is, however, better.

Mr. Dart. I have not been in favor of deep planting. Hardier roots are the only advantage, and these are not needed if people will only mulch and cultivate thoroughly. Deep setting needs to be adopted with caution in a wet sub-soil. In that case, it is best to set near the surface and to mound up around the tree.

Mr. Jewell. But few will mulch regularly, and hence hardy roots are needed as well as hardy tops.

Mr. Dart. I set about the usual depth and mound up, because I fear my soil is too wet to set deep.

Mr. Hollister. Do any members know of deep-planted trees that have stood for many years?

Mr. Jewell. My experience is recent, but Mr. Wilcox, of Trempealeau, Wis., began four years ago, and his trees were all right one year ago. I also planted some Haas eight inches deeper than usual at that time, and have not had any trees do better than these have done.

CRANBERRY CULTURE.

A paper on Cranberry Culture by S. H. Kenney, Esq., of Morristown, was read and ordered on file for publication.

The following is the paper in full:

MORRISTOWN, Jan. 8d, 1877.

MR. EDITOR: Your article last week on cranberry culture suggested to me that a few items about that branch of business in Rice county would be of interest to your readers.

About eighteen years ago, in crossing a marsh, near my residence, I found a few cranberry vines; they were very scattering, not occupying more than one rod of ground, and mingled with what is termed wire grass. I picked one-half a pocket full of berries; there the marsh is what is termed a peat formation, and was then very wet. It was, after the discovery of those few berries, burned over from time to time, which retarded the growth of the vines, till six years ago, when there were seven bushels of berries from that small lot of vines, which had spread so as to cover a number of rods. About 12 years ago, we dug a ditch to a pond of water that had no outlet, and kept the whole marsh very wet. Since that time the spread and growth of the vines has been very rapid. Five years ago, I helped pick the berries; we gathered 60 bushels. The marsh was then sold to another man, who picked not less than 150 bushels three years since. The rapid spread of the vines and their productiveness, attracted the attention of Calvin Russell, and the late W. A. Shaw and Charles Lane, of your city; two years ago last spring they bought the marsh; they dug small ditches once in ten rods, to intersect with the main ditch, which was the outlet to the pond above mentioned. They also built a dike to hold the water in the spring. The following summer the marsh gave good promise of a crop, but the cranberry worm put in its appearance in the beginning of August, and did considerable damage; a frost the same month froze most of the berries, and injured the vines by freezing the tender shoots (as explained in your last week's article on cranberry culture.) A careful examination of the vines a year ago last fall, after the berries were harvested, failed to show any promise of fruit for the following seasons. About September 12th, the ditches were closed so as to flood the marsh, but there being less rain than usual that fall, the vines were not flooded till the snow melted in the spring, when they were nicely covered, and remained so till the 27th day of June, at which time the water was drawn off; what fruit buds there were blossomed and bore fruit, and the next fall Mr. Chas. Lane picked about 80 bushels of the finest berries I have ever seen. The vines are at present full of fruit buds, and if there are not any of them under the water the ditches are all full and the surface of the ground is covered in places.

The growth and spread of the vines in the last two years is something surprising. Mr. Russell set plants and cuttings over a number of acres two years ago; early in the spring, partly by scalping the turf with a bog-hoe, and rolling the turf and sticking the vines down in the scalped place. These also grow in an upright position the first season; last season they run along near the top of the turf, in some cases 80 inches, and then took root in the turf. The ditches were 12 inches wide and 12 inches deep, and the vines, in some cases, run into the ditch and crossed to the other side. Some vines were set also by cutting through the turf with a spade, and pressing in the vines with a piece of board sharpened on the end. These made nearly as good growth as the others, and look very promising. Still another way: the turf was scalped and piled, and the ground plowed when the frost had come out of the ground four inches deep. The vines were pressed in between the furrows. About an acre was planted in this way.

These vines made considerable growth the first season, and had a few berries on them. Last season some of the runners grew nearly three feet. The grass has grown considerably on this plat. Early last summer, the grass was carefully pulled out of three square rods of the ground to ascertain whether the vines would do any better without the grass. It was found, however, that the best growth was obtained where the grass was not pulled. The vines seem to require the shade that grass gives them. These vines were all set early in the spring, as early as the frost would permit. A few vines set the 16th day of June, and the date carefully noted by me, grew, but never have made such fine growth as the early set vines. Still another piece of ground was set out, and sand spread on to the depth of three or four inches. The vines look well.

It will require considerable time to determine the best mode of culture, but from careful observation of peat lands that have been drained in this vicinity, I should say care must be taken not to drain the peat dry enough to cause it to rot, as then it becomes good grass land, and the grass makes such rank growth as to choke the vines. The vines do not thrive where water stands on them through the growing season. Flowing the vines prevented the ravages of the cranberry worm the past season. The flowing of the marsh in the spring brought many berries to the surface which the wind and waves washed in all directions. From a careful experiment with the seeds of some of these berries planted, we obtained in one season from 1½ to 2 inches growth of vine. We found not ten rods from where the original vines grew, three distinct varieties of berries, which evidently must be seedlings; one a very dark colored berry—almost black, and ripe about two weeks sooner than the most of the crop; the vines in many places have almost entirely occupied the ground, and look as near perfection as one could imagine. The thorough system of drainage, enabled the fruit to be gathered immediately after heavy rains, the berries were much larger than ever before, and they would command one dollar per bushel more than any berries I saw in the St. Paul market, last fall. The vines set two years have not had time to develop yet. I hope in the future to be able to report great success in this branch of industry. Calvin Russell deserves much credit for the experiments detailed above. The prospects of success in this enterprise look to me very encouraging.

SETH H. KENNEY.

DISCUSSION.

Importance of Cranberries.

Pres. Smith. This is an important subject. The fruit can be kept the year round, shipped to all parts of the world and is healthful; hence its importance. I consider it one of our most important fruits. I have kept it from one season till the following October in a cool cellar. Few fruits keep like this. Several years

ago 7,000 barrels were shipped from St. Paul, and I see no reason why we cannot sell 70,000 barrels, and thus see less of hard times.

Mr. Kenney. The vines spread rapidly, and altogether it is an easy fruit to grow.

PERENNIAL GARDEN VEGETABLES.

The paper of Wm. E. Brimhall, Esq., of St. Paul, on Perennial Garden Vegetables was then read and ordered on file for publication.

The following is the paper in full :

Asparagus.

This is justly esteemed one of the choicest vegetables of the garden.

Indeed it possesses every quality to recommend it—flavor for the palate, hardihood of constitution, facility of culture and it brings profit to the grower.

Although few plants demand so little trouble, no others are so well worth a great deal of trouble. This it will be our object to prove while explaining the method by which it is cultivated.

Propagation.—In forming new beds it is customary to use two year old plants, because they may be safely removed at that age and will come into bearing in two years. May is the best time for planting: but having produced beds from seeds, we prefer that method of propagation.

Too much pains cannot be taken in preparing the ground before planting, as nothing can be done after the plants are started except by topdressing. If the soil is stiff and unpleasant to work, mix with it some lighter earth, and about a wagon load of well rotted manure to every ten feet square.

When the land is fit for planting sow the seed in drills eighteen inches apart. When the plants appear, thin to one foot apart in the row. For the first year the ground should be kept free from weeds and the soil light by frequent cultivating.

The following spring cover the ground with about three inches of finely pulverized manure, and during the season cultivate as before. Remember you are preparing a bed that will last twenty years.

In the autumn when the stalks have turned yellow, cut and burn them.

Before the ground freezes, cover with a good coat of good manure. In the spring fork it in and cultivate as before. If your work has been well done, the next spring you may have asparagus for market.

Cutting.—At every cutting cut the bed clean, leaving no thin spindling shoots. But do not cut later than the first of July, for if every shoot be taken off a crown, to the end of a long season, that root will be destroyed.

To prevent the crowns from being too deeply buried, on account of the fall dressings, the ground should be forked late in April, and the rough earth raked off.

Manuring.—A dressing of salt and ashes is very beneficial; about one pound of salt to the square yard.

Forcing.—With respect to forcing, it is very easy, with narrow beds, to bring the plants forward by digging trenches eighteen inches wide and a foot deep, on each side of the beds, and fill them with warm stable dung, raising the dung six inches above the level, but not covering the plants. If the nights are cold, the beds should be covered to prevent freezing.

Planting.—If plants are to be set out, the ground must be prepared by digging trenches two feet deep and filling them with equal parts of light soil and well-rotted manure mixed together. The plants should be set six inches deep, with the roots spread horizontally. Care should be taken to set the crown two inches below the surface. When the plants are started, they should be treated in the same manner as those raised from the seed.

Marketing.—When the crop is successfully raised, only one step has been accomplished towards turning it into money. When cutting, do not leave it long exposed to the sun, for it soon wilts; but, as soon as possible after cutting, wash, assort and bunch, making two sizes, and of equality throughout. Cut the butts neatly and square, and tie very tight at both ends.

If obliged to keep the bunches a day or two before sending to market, stand them in a tub with an inch or two of water, and keep in a cool place. Always, in handling, keep the heads one way; and when it is bunched the bunches should stand upright. It is desirable that asparagus should appear well in market.

Varieties.—The oldest favorite variety is "The Giant." "Conover's Colossal" is a mammoth variety fast coming into favor. It bears cutting a year sooner than any other sort.

Rhubarb.

Rhubarb, although a native of Asia, is so hardy as to resist the frosts of our severest seasons. And of all esculents, for culinary purposes, it is the most easily prepared.

Within a few years its cultivation has increased, so that immense quantities are annually sold in all the large markets. It has become so common, and is so easily produced, that little need be said in relation to its culture. But in this, as in everything else, nothing less than the *best* results should satisfy the gardener.

Propagation.—Any one of the many varieties may be propagated from the seed. But as the seed does not *always* produce the same variety as that from which *it* grew, the better way is to take offsets with one or two good eyes and set them, either in the spring or fall.

Soil.—The soil must be moist and rich, for upon the strength and quickness of the soil depend the desirable qualities of the stalk—crispness, flavor and succulence.

Care.—Plants from offsets should not lose a leaf or stalk, except by natural decay, until the second year; and in time of drought they should have a plentiful supply of water.

The plants should stand in rows three by four feet apart, and be well covered with manure in the fall, which must be forked in around the roots in the spring. The seed stalks must be pulled whenever they appear, and if the leaf stalks are kept moderately thin good rhubarb may be gathered until the time of frost.

Varieties.—The “Linnaeus” is the earliest variety, very high flavored and prolific. We consider it the best for family use.

The Victoria is a larger variety, less acid, but coarser grained than the first mentioned.

Horse-Radish.

This has long been a favorite garnish for roast beef and other fresh meats; it eminently possesses some of the properties which prevent or correct the bad effect of an excess of nitrogenous aliments upon the system. It possesses valuable medicinal properties in cases of hoarseness, dropsy, rheumatism and paralytic affections.

As a condiment, it finds a ready market in all large cities, and no kitchen garden should be without its bed of horse-radish.

Soil.—It succeeds best in a damp, rich soil; it never has large roots in poor or dry or shallow soil; or in a shady place or in the drip of trees. It thrives in the trenched bank of a ditch, where the ground maintains a constant, regular, considerable moisture.

Preparation.—Where large beds are to be made the soil should be prepared the year before by subsoil plowing and working in a good coat of very old manure, if the manure is new or newly applied, too much top and too little root will be the result.

Propagation.—As seed cannot be relied upon, it is better to use sets, which may be had by cutting the roots into lengths of two inches, planting in the fall or spring in rows eighteen or twenty-four inches distant each way. They should be dibbled into freshly trenched ground, covering slightly. If the ground has been well prepared, there will be fine large roots by the second year.

Planting.—Good roots may be made to grow the first year in the following manner: Throw the ground into ridges about eight inches high by turning two furrows together, leaving the ridges two and a half feet apart. Into these ridges, set, with a dibbling stick, fine roots about the size of a pipe-stem and as long as can be procured, say from eight to sixteen inches. The best way to get such roots is to save them when digging for market, trimming off all the long slender ones and packing them in dry sand or sawdust; keep until the following spring. These rootlets should be set at an angle of forty-five degrees so that they may not be too deep in the ground.

Dressing.—But the most important part is what is called “dressing the roots.” When the plants are well started the earth should be thrown away from them first with a plow; following with a hoe until the roots are bared, then with a garden trowel scrape all the fibers and rootlets from the main root leaving it smooth except at the lower end.

When the roots have been well dressed they should be earthed up again.

This dressing should be repeated about the first of August, again the first of September. Using this method we have raised roots weighing one pound each and they were smooth, strait and solid; if left in the ground until the second year they become hollow and woody.

Horse-radish raised in the above manner, sells for from ten to fifteen cents per lb.

DISCUSSION.

Asparagus.

Pres. Smith. I trench deeply for my bed, and plant the roots deeply, and cut white for the St. Paul market; cut from five to six inches under ground.

Horse Radish.

Mr. Jewell. I doubt the good effects of horse radish, mentioned in the essay. In the case of a man whose stomach was open, and could be looked into, it was found that horse-radish retarded digestion. We are likely to ascribe good effects to whatever pleases our palates.

Pres. Smith. The Germans put it into liquors for the rheumatism.

Mr. Kenney. It was recommended by a physician for a neighbor of mine who had fits.

MR. HART'S LETTER.

A letter from John Hart, Esq., of Winona, was read and ordered on file. The following is the part that relates to the discussion which followed the reading:

WINONA, Jan. 10th, 1877.

Mr. C. Y. Lacy, Esq.:

DEAR SIR: Your note of — was duly received, asking me to suggest some topic for discussion at your next annual meeting. There is nothing should call our attention more than the protection of our trees against insects. We have watched closely for the last year. Whenever we found a tree blighted, we examined it close and found that insects were the cause. We took a limb from a Transcendent tree which was showing blight, and, examining the leaves, we found them covered with small insects. It will appear strange that some varieties will escape, while other varieties are

nearly destroyed, all in the same row. We suppose from this that those little insects are like other living beings, and go for the food that suits their taste best. We remember when we first planted apple trees here, our trees were entirely free from insects, and our apples free from worms. At that time our small birds were very numerous, which I think protected our orchards.

Respectfully yours,

JOHN HART.

DISCUSSION.

Cause and Cure of Blight.

Mr. Jewell. Our friend Hart is mistaken. Scientists have not found any such insects. Some think it is a vegetable fungus, and probably they are not far from the truth. I used to be troubled with the blight, but have now got rid of those trees which blight the worst. I concluded I had no use for the Transcendents, and dug them up and have not suffered seriously since. Mr. Cook, of Rochester, lost heavily from blight, because he did not get rid of his old Transcendents before the blight came. Mr. Jewell detailed another case in which Transcendents had been the cause of great loss. Mr. Pearce believed that the ammoniacal emanations from a manure pile would prevent it, but the blight is beginning on trees subjected to these conditions. We can stop it because a tree is never attacked when not growing. So, if when beginning to blight, we stop the growth by root-pruning, or other means, we stop the blight. Last summer my trees began to blight, so I girdled them, taking off a narrow ring of bark nearly or quite around the trunk, and covered with wax. It stopped the blight.

Mr. Pearce. I saw a German last summer who thought that the sun scalded the sap to produce blight. He thought so because the leaves began to wilt one very hot day. I think the ammonia theory plausible, at least. I have no blight to speak of. I got rid of my Transcendents some time ago, but there are other trees also very liable to blight.

Mr. Grimes. Thus we see how liable we are to be mistaken. Mr. Harrison and others, some years ago, took a magnifying glass and found some insects on blighted trees, and concluded that they were the cause of the blight.

Mr. Jewell. What advice shall we give to the man who has Transcendents? This is a serious question. Perhaps he has bought them of you. Shall you tell him to make a brush-pile of

them? I think the straightforward course is the best. He probably will not follow the advice, but will yet wish he had.

Mr. Sias. I object to that plan. We should be obliged to throw out the best crab or hybrid we have—Meador's Winter. Mr. Hart's paper is the best we have had on the subject of blight for some time. I believe it is due to insects, not to one but to several.

Mr. Jewell. I meant to throw out those kinds which blight the worst, and are most likely to cause an orchard to be infected. I do not attach any importance to Mr. Hart's paper on that subject.

Mr. Kenney. I have many Transcendents, and would not like to dig them up. I consider them valuable, and my neighbors do likewise.

Mr. Jewell. I would dig them up only when they blight, and not before.

Mr. Pearce. I propose to put them by themselves and let them blight. I believe they will pay the best of any, notwithstanding their liability to blight.

Mr. Grimes. Mr. Jewell is not consistent in his treatment of the Transcendent. An ounce of prevention is worth a pound of cure.

Mr. Jewell. A man is consistent in refusing to endorse what he endorsed a few years ago, if the interval has shown him to be wrong. I will still sell Transcendents to nurserymen at wholesale, but not at retail, and I will not recommend them to any one.

Mr. Kenney. I still have faith in the Ben Davis under particular treatment.

Adjourned to meet at 9 o'clock A. M. Wednesday.

WEDNESDAY MORNING.

PLANTS UNDER CULTIVATION.

The meeting was called to order by the President at 9:30. An essay on Cultivated Plants was read by W. T. Scott, Esq., of Minneapolis, and ordered on file for publication, after which Mr. Grimes introduced the following, which was carried unanimously:

Resolved, That the thanks of the Society are due, and we hereby tender the same, to W. T. Scott, for his well written and intelligent essay on Cultivated Plants.

(Mr. Scott's paper has not reached the hands of the Secretary. If received in time it will be placed in the Appendix.)

A short discussion on the above subject was had in which Messrs Scott, Hollister and Lacy took part.

REPORT OF DELEGATES TO CENTENNIAL EXHIBITION.

On motion the report of the Committee on Centennial Exhibition was called for. Mr. Grimes asked leave to make a partial report since the report of the Committee on Awards had not yet come to hand which would enable them to make a complete report. The request was granted and the partial report was read by Messrs Grimes and Elliot. After the reading it was ordered to be placed on file for publication when complete, and the following resolution carried:

Resolved, That the thanks of the Society are due and are hereby tendered to those persons who contributed fruits to our exhibition at the Centennial Exhibition and that they are tendered especially to the members of the committee whose report we are to receive.

(The report of the Delegates will be found in the Appendix to this volume.)

DISCUSSION.

Fruit Charts.

The subject of fruit charts, suggested by the report, was taken up for discussion.

Mr. Jewell. I question the practical value of such a chart.

Mr. Grimes. It would be of great value.

Mr. Dart. I think it of not much practical value.

Mr. Grimes. It would mark the northern and southern limits of each fruit.

Mr. Jewell. The weakness of the theory is that the fruit lines would not correspond to the isothermal lines.

Mr. Elliot. We want a map that will show that apples will grow in the river counties, while they will not grow in the northern or the interior counties.

Mr. Jewell. It requires too much careful knowledge to construct a good one, and a poor one would be worse than none.

Mr. Dart. We do not want one because in the regions outside of these lines people will be discouraged from trying to raise fruit.

Mr. Jewell. We want to educate the people so that soil and elevation shall be taken into account, as they must be in deciding whether fruit can be grown or not, and we can do this about as easily as to construct a chart.

Mr. Scott. We want some kind of information that shall show the elements of success in fruit growing.

Mr. Pearce. The influence of soils has struck me frequently. We have soils on which apples and grapes do well, and I think also where pears will grow. I have come to the firm conclusion that I can raise apples, but to do so will take precautions as to the nature of the soil.

A motion was made to strike the chart suggestion from the report, but it did not prevail. It was then moved and carried that the President appoint a committee to report on the plan for a fruit chart at the next annual meeting.

Messrs. Harris, Jewell, Brand, Grimes and Smith, of St. Cloud, were appointed such committee.

On motion, the Finance Committee was requested to report this evening. The Committee on Cataloguing Fruits, &c., was requested to report to-morrow afternoon. Mr. Jewell replied that they had no report prepared, but could have one by the time the transactions would be printed.

PRESERVED FRUITS.

Mr. Elliot was requested to report on the methods of preserving the fruits on exhibition before the Society, that had been kept beyond their season. He reported to the effect that the process was a very simple one; very cheap, and, so far as he had tried it, a very good one. The process is a secret one, but the materials are of common occurrence. The fruits and vegetables which had been put up in the fall appeared to be in good condition.

WEDNESDAY AFTERNOON.

REVISION OF STRAWBERRY LIST.

The meeting was called to order at 2:15 o'clock p. m.

The revision of the Strawberry list was the first business taken up. The list as last revised was read by the President.

Ida.

Mr. Kenney. The *Ida* stood better than anything else last year with me.

Champion and Charles Downing.

Pres. Smith. The *Champion* stood the best last year with me. The *Charles Downing* has been in the St. Paul market for four years now and has grown in favor. The vine is hardy, even more so than the *Wilson*, and the berries are large.

Mr. Elliot. The fruit is very showy and is going to take well, but it will not bear so much handling as the *Wilson*; none will do that, but the *Downing* has a better flavor and a brighter scarlet color.

Hart's Seedling.

Mr. Jewell. Does any one know anything more of *Hart's Seedling* than was told last winter?

Pres. Smith. It lived well last winter, and those on exhibition last summer were very fine.

Mr. Elliot. Out of twelve vines which I received, only two lived and those were much injured.

History of Hart's Seedling.

[Since the meeting, Mr. Hart has sent us the following history of his *Seedling strawberry*, which we insert here:]

While describing our *Seedling apple trees*, it may not be amiss to say a word about our *Seedling strawberry*, of which there is considerable inquiry this spring. As for ourselves, we prize it more than all the *Seedling apples* we have ever raised. We give you its history as brief as possible. About 14 years ago we commenced to sow *strawberry seed*, raising a small patch every year since, and finding no berry as good as the *Wilson*, we threw them away as fast as tested. About three years ago we had a small patch with several varieties of berries in it, among which were the *Agriculturist*, *Jucunda*, *Russell*, *Wilson*, *Triumph*, *Duke of Kent*, &c. We took the largest berry we could find from each of these berries, saved the seed and sowed it, and raised over 200 different varieties. From this lot we got one plant from which our present stock originated, which, we think, is the best *strawberry* we have yet seen, considering size and quality.

Respectfully yours,

JOHN HART.

Boyden's No. 15 and Red Jacket.

Mr. Jewell. Does any one know anything about Boyden's No. 15? With me it is better than No. 30. (Mr. J. also enquired if any had tried the Red Jacket, but received no reply to either inquiry.)

It was moved and seconded that the list of strawberries stand over as last adopted.

Countess de Haricourt.

Mr. Elliot. I want to say a word about the Countess de Haricourt. Wm. Lyon, of Minneapolis, marketed 200 to 300 quarts daily last summer. It stood last winter the best of any in our section.

It was moved to amend the motion by adding Countess de Haricourt and Prouty's Seedling for trial. The amended motion was then carried.

REVISION OF RASPBERRY LIST.

The revision of the raspberry list was the next business taken up.

Mr. Grimes. I move to recommend the Doolittle and Seneca for general cultivation for black-caps, and the Philadelphia and Turner for red. The Doolittle is the earlier but the Seneca is the better berry.

Pres. Smith. Mr. Brimhall, Mr. Boxell and myself agree on the Doolittle, Seneca and Ontario as the best black-caps. The Ontario has about the same season as the Doolittle, but it is sweeter and richer than either that or Seneca, and about the same as to hardiness. The Mammoth Cluster I have thrown over, for its want of hardiness, and the dry chippy character of its fruit.

Mr. Grimes. The Doolittle and Seneca are about equal in hardiness.

The motion was divided, and a motion to recommend the Doolittle and Seneca for general cultivation for black-caps was carried unanimously.

A motion to recommend the Ontario black-cap for trial, was carried unanimously.

Turner and Philadelphia.

A motion was made to recommend the Philadelphia and Turner for general cultivation for reds.

Pres. Smith. The Turner is hardier than the Philadelphia ; the fruit larger and better ; the yield not so good as the Philadelphia when the latter is at its best, but its season is longer ; from the 5th of July to the 5th of September last year. It is nearly free from thorns, but suckers badly, but the suckers are easily got out by the hoe or plow. Mr. Boxell is much pleased with it. In flavor it excels all others.

Mr. Grimes I thought I never saw any canes fruit so heavily, and the quality was superior.

Mr. Jewell. Three years ago I got 200 plants, and now I have a million. Mr. Stickney wrote me that it did excellently last year, but that it would not become popular because of its suckering and it will not bear unless the suckers are kept down.

Mr. Elliot. I think I prefer it to the Philadelphia. I think we generally let too many canes grow in a hill to get good crops of good fruit.

Pres. Smith. I do not want more than four canes in a hill.

Motion carried, 9 for and 1 against.

Herstine and Ganargua.

Pres. Smith. Has any one tried the Herstine ?

Mr. Grimes. It has been grown by a neighbor of mine for two years. The first year he was greatly pleased with it, but last year it was not so good. Has any one tried the Ganargua, a red berry that grows or roots at the tips like the black-caps ?

Golden Thornless.

Mr. Jewell. Has any one tried the Golden Thornless ? Some bore with me last summer, but the quality was not good. The fruit was somewhat woody.

Mr. Grimes. My experience with the Golden Thornless has been similar.

THE PROPAGATION OF TREES BY CUTTINGS.

A paper on "The Propagation of Trees by Cuttings," by L. B. Hodges, Esq., of St. Paul, was read, after which the paper was ordered on file for publication, and Mr. Jewell moved a vote of thanks to Mr. Hodges for his humorous and instructive essay, and also a rebuke for his reflection on the religious intelligence of the

members of the Society. The resolution was passed amid laughter and applause.

The following is the paper in full:

When a small boy, more than forty years ago, in the pleasant village of Canandaigua, N. Y., my attention was arrested by a magnificent great willow on the premises of Judge A——, one of the pioneers of that region. It was a tradition among the boys that this immense tree grew from a willow switch which the Judge cut in Connecticut and used as a riding whip during his horseback journey from Connecticut to Western New York, and for over thirty years of my manhood passed on the broad prairies of the Northwest, I have often seen and heard of similar willows with very similar histories. Now, this is all well enough *per se*, but when intelligent and educated gentlemen, on the strength of such occasional and isolated circumstances, affirm that all you have got to do in order to grow the willow, the cottonwood or the Lombardy is to simply stick a cutting in the ground in most any sort of a hap-hazard way, they are simply leading the multitude astray and doing harm rather than good. The object of this paper is to furnish to the people interested in the propagation of forest trees by this particular method such practical information as a long and varied experience has proved to be correct.

If this sort of experience is in conflict with tradition and preconceived notions, why so much the worse for the traditions and notions. I begin by saying that a proper preparation of the soil is not only of primary importance, but also a prerequisite condition of success.

Soil and its Preparation.

Your ground must be good ground, it must be thoroughly subdued and mellow before planting, and right here I propose to point out and expose the practical nonsense and absurdity of the proposition that a cutting will grow anyhow, so you only stick it in the ground. Acting on this absurd proposition, hundreds of thousands of all sorts of cuttings have been stuck into all sorts of ground by all sorts of people. The *results* are well illustrated in the parable of the sower.

(Before going to bed to-night, you fellows who haven't read that parable for twenty years or more had better look it over.)

Soon after the passage of the Timber Culture Act of 1873, I read in one of the most ably-conducted and widely-circulated of our country papers, an editorial showing the settler how to grow a forest under the provisions of said act. *Boiled down*, it simply amounted to this: Strips of breaking two or three furrows wide, said strips twelve feet apart and the cuttings to be stuck twelve feet apart in the strips, in the raw, unsubdued sod; no further labor or expense necessary—result, a forest. I promptly denounced the absurdity of such teachings, but for all that, a heap of fellows had to try it on. It would be a good time now for them to report what luck they have had.

In the pursuit of knowledge under difficulties, my curiosity has led me over quite a large number of tree claims which have been planted in good faith in accordance with such teachings.

Candor compels me to say that when you find a muley cow climbing a tree stern-first, it will be up one of the trees so propagated on one of those tree claims.

The Northern Pacific Railroad Co., expended a number of thousands of dollars in just about that sort of a way of propagating forest trees from cuttings, and succeeded in demonstrating that it was just as easy to drive a government mule through the eye of a needle, as to grow forest trees in any such way as that.

The idea of getting something for nothing, is a bad one. There must be an equivalent, a *quid pro quo*.

In your dealings with each other, this idea of something for nothing, may work, *occasionally*,—but you can't bulldoze the prairie with any such nonsense.

The cutting plunged full length into a deep, rich, mellow soil, under the vivifying influences of heat and moisture, soon begins to expand its buds, and throw out its slender, thread like, fibrous roots. If the ground has been properly prepared, those roots at once begin to draw nourishment for the incipient tree; the buds grow into branches, and in a few months you have a thoroughly developed forest tree, and the better cultivation you give this young tree, the sooner you get a tree that is of some use in the world.

On the other hand, the cutting stuck in the raw sod, makes a failure in trying to get its roots into the hard earth in a vain attempt for nourishment; struggles along in a feeble, quiet sort of a way till dry weather sets in, and then quietly starves to death without a struggle or a groan, and the innocent author of this miserable abortion wonders what ails his trees, and sometimes gets mad, and uses "cuss-words," about the man who sold him the cuttings.

To go back to the starting point: break your prairie in June; break shallow—back set or cross-plow last of Sept. turning up two or three inches of fresh dirt.

If in a hurry, (to save your claim) harrow thoroughly, and plant your cuttings right along up to the time the ground shuts up, and if not through, finish up the job early in the ensuing spring. If in no hurry it is good practice to raise a crop before planting cuttings. A hoed crop is best, and if well cultivated leaves the ground in admirable condition for tree-planting. If you sow small grain before planting, you can't be too careful in getting your seed *perfectly clean*.

A few grains of wild buckwheat, or, what is more to be dreaded, pigeon grass, will give you an infinite amount of trouble, and by increased labor in keeping it down, double the cost of growing the forest.

In growing a wind-break from cuttings, for a single row, I would prepare a strip of ground not less than $8\frac{1}{2}$ feet wide, by deep ploughing and thorough harrowing.

I would have the ground as mellow as an ash-heap.

I would draw a line lengthwise along the centre of this strip, and about every twelve to eighteen inches would plunge the cutting in nearly or quite full length, and at once tramp the mellow earth firmly around the cutting; and then I would keep that strip of ground clean as a hound's tooth. I wouldn't allow a weed or blade of grass to grow on that strip dedicated to the wind-break; and I should keep the cultivator running up and down the margin each side the row of young trees pretty often till harvest time, after

which, if any weeds or grass had put in an appearance, would pull them up, carry them off and burn them up.

I should repeat this process the next season, and in the fall would mulch heavy with good manure.

I think by that time you will have that strip of prairie pretty well bulldozed, and a wind-break started that won't dry out or freeze out, and which will stand and grow in spite of grasshoppers or other enemies.

Time of Preparing Cuttings.

As far as the willow is concerned, most any time will do.

I have cut them nearly every month in the year, yet would prefer cutting and planting right along through the month of May, as being then liable to less loss and better growth.

I confess in my own experience to more satisfactory results with cottonwood cuttings cut and planted in October and November than in any other months.

As far as willow, cottonwood and Lombardy cuttings are concerned, good fresh healthy ones are about as sure to grow (in Minnesota) if properly handled, and under the most favorable circumstances, as either corn or potatoes. *Failure* is not necessary. Do your work intelligently and thoroughly, and at the proper time, and *success* is the rule.

Care of Cuttings till Planted.

In the fall of 1874 I caused to be cut and hauled together, enough white willow to make five hundred thousand cuttings. I reduced some of this brush to cuttings in the fall, tied them up in bunches of a hundred each, set them up on end in trenches dug about a foot deep, threw a foot of dirt over them and let them lay till spring. The balance was stacked in good shape, covered with a layer of slough hay—threw enough loose dirt over it to keep the wind out, and let the thing go till it thawed out in the spring—then uncovered it, worked it up into cuttings and planted them. They came good and grew well, and I never knew any difference between those buried in trenches, or those of the stack. Whenever in the course of human events, I found a lot of cuttings drying up and apparently worthless, before planting I would "swell 'em up" by throwing them into the most convenient lake, pond or stream. But a good way is to keep them buried in the trench until you are ready to plant.

There are plenty of cottonwood trees in Minnesota propagated from cuttings in the manner I recommend, now big enough to make a cord of wood each—17 to 20 years from the cutting.

You can grow 300 such trees to the acre. Can you grow anything that will pay better?

Is there any better way to "conquer the prairie," or to bulldoze and intimidate old Boreas?

DISCUSSION.

Mr. Scott. I would like to know what has been the success of others with cottonwood cuttings. I have had but poor success.

Pres. Smith. Have you not tried on sandy soil?

Mr. Scott. Yes.

Pres. Smith. That is the trouble. On heavier soils there is no difficulty.

REVISION OF CURRANT LISTS.

The currant list was next taken up for revision.

Pres. Smith. I have two new ones, Bailey's Sweet White and Clinton White. They are both good.

Mr. Grimes. The Versailles is liable to kill down, and is much like the cherry, hence I am neither increasing nor diminishing my stock of it.

Mr. Scott inquired concerning Stewart's Seedling.

Pres. Smith. I consider the Victoria one of the best. I also grow one known as Smith's Seedling. Bailey's Sweet and Clinton White have stronger bushes and better flavored fruit than the White Grape.

Mr. Scott. Stewart's Seedling is a fair bearer, vigorous and very early. The fruit is of good flavor and the size of Red Dutch.

Mr. Elliot. I do not think the Victoria better than the Red Dutch. We have none yet to beat the latter. I grew 150 bushels last year. I prune freely.

Pres. Smith. Mr. Elliot may have a better strain of Red Dutch than I have.

Mr. Elliot. The Red Dutch averages a larger berry than the Victoria, but the bush of the Victoria is more vigorous. I cut out a portion of old wood each year and leave some new shoots. The borers started my pruning, to get rid of them. I cannot say that any one variety is more liable to their attacks than other varieties.

Pres. Smith. Has not Mr. Elliot his currants on sandy soil? The Victoria requires a moist, rich soil.

Mr. Elliot. Yes; mine are on sandy soil. That makes a difference, and we ought to state the nature of the soil in all our discussions.

It was moved to adopt the old list of currants, with the White Dutch stricken out, viz.: Red Dutch, White Grape and Victoria, for general cultivation. The motion was carried, 7 for and 2 against.

Mr. Dart. Why strike out the White Dutch?

Mr. Elliot. Because of its poor yield.

It was moved to recommend Stewart's Seedling for trial.

The motion was carried unanimously.

Pres. Smith. The Black Naples is popular in market, and we should recommend one black variety for trial at least.

Mr. Elliot. There was a great demand for black currants last summer.

Pres. Smith. They are only moderate bearers.

Mr. Elliot. On moist and rich soil, and well cultivated, they give a good yield.

It was moved to recommend the Black Naples for general cultivation as a black variety.

Motion carried unanimously.

GOOSEBERRIES.

Gooseberries were then taken up.

Mr. Jewell. Has any one tried Smith's Seedling?

Pres. Smith. The American Seedling is the best I have tried, a pale red in color.

Mr. Jewell. Tried the Downing for several years but it was not a success.

JANESVILLE GRAPE.

Mr. Jewell. I want the Janesville Grape to take a higher place. It is very early, very hardy, bears young and bears neglect. I left mine uncovered last year and they came through in good condition.

Mr. Pearce. It is the only one I have succeeded with. Some vines bear the same year they are set. The flavor is nearly equal to the Concord and some say better.

It was moved to transfer the Janesville to the list for general cultivation. The vote resulted in a tie, 4 for and 4 against, the President deciding the vote by voting in the negative.

CONDITIONS OF SUCCESS IN FRUIT CULTURE.

Mr. Pearce's paper on "Fall Planting and Root Killing" was called for, but the following was offered by Mr. Scott:

Resolved, That the want of due care in the selection of location is the greatest retarding influence to successful fruit culture in Minnesota.

Mr. Brand moved a substitute:

Resolved, That for successful fruit culture we should always have moist autumns and the mercury never below zero.

Mr. Jewell moved to amend by adding "and the best location is outside of the State."

Mr. Dart. I do not believe that want of proper location is the greatest retarding influence. I think variety has more to do with it than location.

Mr. Scott. In this State success is not to be obtained by the choice of varieties, but if we have not the proper location and we make one by planting wind-breaks we have a better chance of success.

Mr. Dart. We can take the best varieties we now have on the prairie and succeed with them—the Duchess and, perhaps, the Wealthy, as well as the Russian apples.

Mr. Jewell. We have a few that will live if properly planted anywhere above water. I consider selection of the proper varieties, site, and proper care in planting and cultivation, the essential points; and I consider this the order of their importance.

Mr. Jewell moved to amend by substituting the following:—

Resolved, That the greatest obstacles in the way of successful orchard culture are, 1st. Want of knowledge of the best varieties. 2d. Not selecting the most desirable locations; and, 3d. The lack of proper attention and skill in the planting and after-culture.

This substitute was carried.

GOOSEBERRIES AGAIN.

The discussion of gooseberries was then resumed.

— — — — — Does any one grow gooseberries successfully? There seems to be some demand for them at 5 cents per quart, or \$1.50 per bushel.

Mr. Grimes moved to recommend the American Cluster gooseberry for general cultivation, also known as Cluster and American Pale Red.

Mr. Scott. They have killed down when side by side with the Houghton.

Mr. Dart moved to amend so as to recommend for trial.

Mr. Brand moved to lay the gooseberry question on the table.

The motion was carried.

FALL PLANTING AND ROOT-KILLING OF FRUIT TREES.

Mr. Pearce's paper on "Fall Planting and Root-killing" was then called for and read, after which it was ordered on file for publication.

The following is the paper in full :

Fall Planting.

Since the fall of 1872, preceding the cold winter, I have planted or caused to be done from 100 to 1,000 fruit trees each fall, usually three to four years old, and in no instance where the trees were of hardy varieties, wood well ripened and trees properly set, mulched, and, if necessary, the mulching wet, have the trees died or presented a sickly appearance. I do not write this to induce others to practice fall planting on a large scale, for it is very likely many of them would fail, owing largely to the unripened condition of the trees when received from a distance, as nurserymen who have large amounts of trees to deliver in the fall commence digging before vegetation ceases, stripping off the leaves. Such trees are not fit for fall planting; they will do for spring, providing they can be kept from freezing during the winter.

Root-Killing.

It is a well-known fact, by those who have given this subject their careful attention, that the dry condition of the soil late in the fall, just previous to freezing up, is one of the principal causes of root-killing. It matters not how hardy the roots are, freezing and thawing in dry ground is sure death, and every fruit-grower who expects to make apple raising a success must pay strict attention to his soil, especially late in the fall.

Mulching at the proper time is considered a sure protection against drouth, but there are times in order to make the roots of fruit trees secure against all doubt, it is well to wet the mulching. This should be done a few weeks before the ground freezes up, providing the ground is not sufficiently moist to draw the frost from the roots of the trees.

The fall of 1872 was exceedingly dry; but little moisture was in the soil. I was then in the nursery business; had several thousand trees from two to four years old, many of which were sold and delivered, some were set out and the balance heeled in. Those set out were mulched, and the mulching kept wet until the soil was good and moist. Those that were heeled in were managed in much the same way. The roots were placed in loose earth and properly covered with earth root and branch, mulching placed over the roots and that wet till the ground was well saturated with water. In both cases the trees came out all right in the spring, while those in the nursery unmolested were nearly all root-killed in the spring regardless of varieties.

The past fall the ground in regard to moisture to protect the roots of fruit trees against root-killing was in an excellent condition, and I apprehend no

danger to fruit trees in orchard or nursery, so much so that I did not mulch last fall.

A deep snow falling early in the winter before the ground has frozen and then drifting several feet deep around apple trees, preventing the ground from freezing during the winter, if it is not removed at once from about the trees and the ground allowed to freeze, the roots of the trees will be very apt to perish. The cause is unknown to me; nevertheless, I know it to be correct.

Another item I will give a passing notice. Nurserymen are sometimes negligent or try to do more than they accomplish. Ill-shaped and forked trees are suffered to grow on their ground, and from thence to the farmer's orchard, which is always an eye-sore to an intelligent nurseryman, and a loss to the purchaser. Healthy trees, with tapering stem and symmetrical top always find a ready sale, often at double the usual price.

DISCUSSION.

Mr. Dart. I object to the phrase "always find ready sale."

Mr. Jewell. I object to fall planting. It might succeed, but sometimes it will fail utterly while in any case the trees will make a better growth planted in the spring. I object also to the manner of mulching. I am persuaded that no roots are hardy enough to stand freezing even in dry soil. Wetting requires much labor, and it is better to wet the ground and then mulch, but better still to preserve the moisture by cultivating till autumn. Straw is the best mulch except snow. The next best is coarse manure, but do not use fine manure. Straw is more useful because it catches more snow.

Mr. Pearce. Talk is cheap; facts are what we are after. I do not advise any one else to set trees in the fall. But it is well enough to set a few. I set out a hundred in the fall of 1872 and they lived through.

Mr. Grimes. I am aware that apple trees may be set in the fall but I prefer the spring. But if set in the fall, set deeply, mound up and wrap up the trunk to protect it from wind and sun, for newly set trees stand stationary while established trees still have some action, even in winter.

Mr. Arnold. Fall setting has been an old hobby with nurserymen because they want two sales, one in the fall and another in the spring to replace those set in the fall. But with farmers it is not popular. If not protected by snow they will die even though they are deeply set; deep setting is the only security in this State and fall planting is a very poor practice for Minnesota.

Mr. Pearce. I do not advocate fall setting, but as trees are

sometimes heeled in they are no better off than if set in the orchard. They must be set carefully if set, and heeled properly if heeled.

Trunk Protection.

Mr. Kenney. I have practiced protecting the trunks of trees for four years. I wind them with crushed sorghum stalks. Myself and man wind 100 in a day. I had some pear trees, all but two of which were wound in this manner. These two did not survive the first winter.

Mr. Pearce. The subject of winding is important. I shall practice it. I would wind all standards.

Mr. Kenney. Trees so wound leave out a little later than others. A German friend cuts gunny sacks into strips for this purpose. By winding the trees they do not suffer from borers.

Mr. Arnold. I have practiced it for some time. I think it should not be done too early, before the sap has all returned to the roots.

Mr. Jewell. Nothing is cheaper for the purpose than tarred paper tacked on to lath to separate it from the tree itself. I think, however, double working is a better method, because one can thus get trunks that do not need protection. To grow the Flemish Beauty pear, I think it will be advisable to wind the trunks. This is not indispensable, because we can graft on the June berry. The question is: "Is it better to have trees that need no protection, or to have tender trees and then protect?"

WEDNESDAY EVENING.

REPORT OF AUDITING COMMITTEE.

The meeting was called to order by the President at 7:45 o'clock.

The Auditing Committee reported on three bills presented by J. T. Grimes, T. M. Smith and Chas. Y. Lacy. They were reported correct and just, and the report was accepted.

THE LAYING OUT, PLANTING AND CARE OF SMALL DOOR-YARDS.

The paper of J. E. Booth, Esq., of Minneapolis, on the Laying

Out, Planting and Care of Small Door-yards was read, ordered on file for publication, and the thanks of the Society voted for it.

The following is the paper in full:

Mr. President:

I have been requested to furnish a paper on the "Laying out, Planting and Care of Small Door-yards," and it has been suggested that I should consider the subject with a view of assisting the farmer as well as the city or town resident. I am glad that this Society, largely composed as it is of agriculturists, is at length making an effort to induce farmers to improve their surrounding. This is a subject in which all farmers should take an interest, coming as it does right home to their very doors. I have often wondered why it is that they, more than any other class, should fail to surround their houses with neat, well kept lawns and cheerful flower-beds. Instead of these we generally find a bare yard or a rank wilderness of weeds. I do not mean to say that there are not some exceptions, but these are very few and far between. I hope the time is fast coming when it will be a rare thing to see a farm house without its flower garden, as well as a spacious and well-stocked vegetable garden. And why not? The requisites are very few, and these the farmers possess in ample abundance. A favorable situation, good soil, a little labor, and a very small amount of expense, properly guided and directed by good taste and judgment, would do it. And I think it is due to the want of taste that we so often see around farm houses this lamentable desolation. Of course we are not to expect farmers any more than others to lay out their grounds with the skill of a practical landscape gardener, but what little taste they have they might make use of.

Public Examples.

And right here, let me ask what the various Educational Institutions of the State are doing to improve the taste of the people? What has the State University done? I do not wish them to have a Professor of Landscape Gardening, as they have a Professor of Agriculture, whose business it shall be to teach the art, but let it be by example rather than precept. The site of the University is the finest which could be found, perhaps, in the State. Now, let the University Regents show us what art, going hand in hand with nature, can do. Let the farmers' sons, and daughters too, who attend the University, have something better to see than the present desolate and neglected aspect of the University campus, looking as if nobody owned it. Let them see lawns, and terraces, and flower-beds, and flowers, and arbors, and shady walks, and when they go back home they will not be satisfied till they have something of the same kind there. Then let the Regents do their duty, and instead of causes of complaint give us grounds for approval. Why cannot the boards of education, in city and country, lay out the lots around the school building with some little regard to taste, and instead of their present unsightly appearance, make them "things of beauty" and "joys forever." The cost need not be much, and the expense would be repaid over and over again by the refining and educating influence which could not fail to be exercised on the children; for, at their susceptible age their surroundings have a great influence on their minds.

I will now proceed to consider the laying out of a garden. And first, when the house has yet to be built.

Location and Soil.

In this case, the first thing to do is to choose a good location for the house, and in doing this any natural advantage of view, shelter, &c., should be seized upon. It is also of importance that the soil should be good, as no amount of manuring can make a poor soil equal to one naturally good, for manuring does not permanently enrich the soil, but has only a temporary effect. If possible, a soil should be chosen with a sandy or gravelly subsoil, as this would itself obviate the necessity of artificial drainage which might be required were the subsoil of a clayey nature. If a situation can be obtained which is sheltered from the north and northeast, either by trees or hills, with the proper soil and a gentle slope to the south, then we have the requisites for a good beginning. And here I would say that the way the house is placed will have a good deal to do with the general appearance.

The House and its Elevation.

Care should be taken that the house in style and architecture is suitable to the location. A house which would look well in a town might be an absurdity in the country, and *vice versa*. But whatever kind of house is chosen, if on the flat it should be raised at least three feet above the general level. If on the side of a hill, then the front should stand well up, while the hill should be excavated for the rear of the house. The amount of excavating depending on the slope of the hill and depth of the house. This will give a much more striking appearance, besides affording room for cellars and allowing for various outdoor arrangements.

The Garden.

The house having been built, then comes the laying out of the garden. And here right on the threshold, so to speak, of the subject, I am confronted by the difficulty of conveying my ideas in an intelligible manner by description alone, without the aid of plans, which, of course, the exigencies of the case prevent me from introducing. Did circumstances admit of my giving a few plans, I should be able to treat the matter much more comprehensively and exhaustively. As it is I must do the best I can trusting to your good nature to overlook any shortcomings. I would advise that the garden should consist largely of lawn, as when once well started and in good condition this is much easier to keep in good order than the same space of flower-beds and if properly looked after always presents a good appearance. If the house has been raised sufficiently a terrace should be made around the house, or if on the side of a hill, along the front. In some places the conformation of the ground might necessitate a succession of terraces. The balance of the lawn should be made with a very gentle slope, considerable pains should be taken to get the ground into the proper condition for sodding.

Sodding and Seeding.

It should be properly graded and prepared, and the walks having been staked out, the sodding may be done and for this purpose the finer and closer the grass on the sods the better. If sods cannot be obtained then recourse must be had to seeding down. In this case the preparation of the ground will involve more labor and care. The ground must be thoroughly pulverized by plowing and then harrowed till perfectly smooth and level, all stones, &c., being removed. If only a small lawn is required, then digging and raking may be substituted. Sodding may begin in the spring as soon as the ground is sufficiently thawed out to allow of working. During the very hot weather of summer the operation will have to be suspended, but may be resumed in the fall and continue till the ground freezes up.

Walks and Flower-Beds.

The lawn having been made, then the flower-beds may be cut out. The walks will also have to be made. If gravel can be obtained, then they may be made of this. The ground should be dug out some depth. Put the large stones in first, and then smaller ones, putting only fine gravel on the top. If gravel cannot be had, then walks may be made of bricks, strips of wood, or any other material that may be thought advisable. The walks must be made rather higher in the middle than at the sides, which should not be more than an inch lower than the top of the turf. Where the walks pass up the front of the terraces, steps will have to be used; these may be either of boards or stone, and must be of the same width as the walks. Of course the beds may be made of any shape and size, to suit the fancy of the owner, but I would advise that they be made of simpler form and not so numerous as to cut up the surface of the lawn too much. They may be either scattered about the lawn or made at the sides, as may seem most desirable. If large rough rocks are at hand, a circular bed of pyramidal form, and consisting of two or three small terraces edged with these rocks, would have a good effect. The lower of these may be planted with coleus and the tops with cannas.

As regards the planting of the garden, the beds may be each filled with one kind of flower. or different sorts may be mixed in the beds. The best effect is produced in small beds by massing; that is, using one sort. Where plants are mixed, the tallest growing should be planted at the back, where the beds are at the outside, and the others graded down so as to have the dwarfiest at the outside. In beds cut out of the lawn, the tallest growing plants should be in the centre and the others according to the height they grow. Beds of geraniums, verbenas, feverfews, and other bedding plants have a fine effect, as they are in flower from the time they are planted till frost comes. Coleus of various kinds also make a very fine appearance. A judicious use of peonies, dialetas, perennial phloxes, &c., is also advisable. They are perfectly hardy, and when once started improve every year. Annuals will also be found very useful, but it will be better not to depend to any great extent on these. A great objection to annuals generally is that in this climate they have scarcely begun to bloom before frost comes. If our seasons were of any decent length, much more use might be made of them.

Trees.

A few trees, principally evergreen, may also be introduced with advantage. While a small number of large growing trees may be allowed for the sake of shade, yet care must be used that there are not enough to shade the place too much.

Care of Lawn.

The lawn will require to be mown about once a fortnight. For this purpose, a lawn mower will be found to do the work much better and more expeditiously than it can be done with a scythe. Of course, a lawn mower will cost what might be considered a large sum; but with care it will last for years, and when the better work and saving in time is taken into account, it will be found to be much cheaper than mowing by hand.

Care of Plants.

When plants are first set out, unless in rainy weather, it will be necessary to well water them. In very hot, dry weather it may also be necessary to do this, but it should not be done till absolutely required, and then the ground should be well soaked. Nothing is more injurious than light, frequent waterings. These only dampen the surface of the soil, causing the plants to send up their roots in search of that moisture they cannot find lower down, and so rendering them much more liable to suffer from drought than if watered more copiously and less frequently.

When the House is Already Built.

When a farmer wishes to make a garden to an old house, then he must be guided by circumstances; but, if possible, the same general plan should be carried out here that I have before recommended. I may here observe that the farmer has the great advantage over others that he can get all he wants in way of sods and soil for the cutting and hauling, and the labor would cost him nothing or next to nothing as the work could be done by himself and his men at a time when there is no pressing work about the farm. The flower garden would also afford pleasant and healthy occupation for the spare hours of the ladies of the family.

House in Town.

In laying out the front garden of a house in a town the case is somewhat different to those we have been considering, as there is no choice of location the only thing to do is to take the lot as it is and make the best of it. Here again a lawn, either level or terraced, will look best; a few flower beds of simple design should be introduced, the remarks made above as to planting, etc., will also apply here. But in the case of town residents their time being usually fully taken up by their occupations they have no time to do the work themselves so will have to hire it done. They will probably call in some man who makes a business of laying out gardens and whose skill and taste may be safely trusted to turn out a good job.

Conclusion.

Were it not that I do not wish to take up too much of your time I should like to refer to several other matters connected with the subject. In a paper of this nature it is impossible to do more than give a few of the more prominent points without going as fully into details as might be wished. If however, what I have said should induce any one to attempt to improve his place and has given him some idea how to do it, then I doubt not that if he make a beginning he will get some sort of satisfactory result by the time he gets through.

All of which is respectfully submitted by

J. E. BOOTH, Minneapolis Greenhouse,
Minneapolis, Minnesota.

DISCUSSION.

Sodding and Seeding.

Mr. Grimes. This is the first time this subject has been before the Society. In the country, we have more space to cover and we cannot do so much sodding, because of the labor required, and because sowing seed makes a better sod. I would sow some oats or similar grain to shade the grass while young. Flowers for yards are not so difficult to get as some suppose. Many are easily grown from seed. To set them properly and with taste, is more difficult. I agree with what is said about the grounds of our public institutions, but I would not advise sodding on the University grounds, because they are too extensive and the operation too costly, and it is better to seed. When the ground is prepared to work, locate the shrubbery and then lay out the walks according to the shrubbery. At the University there should also be a fountain, and that should stand near the plant-house.

(The Secretary explained that the University grounds had not been improved because they had not been fenced, and they had not been fenced because it was confidently expected that the boundaries would soon be extended.)

Mr. Scott. It is a mistaken Western idea, that the grounds must be covered with sod to make a velvety lawn. I would rather undertake to make a lawn by seeding than by sodding. I would not recommend to sow grain with the seed. It is better to use a light mulch. White clover and blue-grass, sown in the spring, make an excellent lawn by fall.

FALL AND SPRING SEEDING.

Mr. Elliot. I would not sow in the spring. I have not suc-

ceeded thus in eighteen years of experience. Sow in August, and mulch when the ground freezes, and next season you have a lawn.

Mr. Grimes. Fall is the best time. I have tried several times to make a meadow by spring seeding, but it dries out in spots. I have had better success by sowing in the fall. I would sow oats with the grass very thin. Sowing in the fall gives it a start, and the next summer it gets established before the drouth comes on. You must roll it also after sowing. I would sow blue-grass and Alsike clover. The latter is a more rapid grower than the white, and runs on the ground, and looks fine while it lasts.

Mr. Hollister. Alsike clover is coarse in appearance and unfit for a lawn.

Mr. Grimes. Another grass for lawns is the English lawn mixture.

Mr. Hollister. The lawn mixture usually consists of one bushel of red top, one bushel of blue-grass, four pounds of white clover, and two pounds of sweet vernal. Wood meadow-grass is also often mixed in.

ANNUALS.

A paper on "Annuals," by Miss Hortense Share, of Rosemount, was read, and ordered on file for publication.

On motion of Mr. Grimes, the thanks of the Society were tendered Miss Share for her valuable, interesting and well-written paper.

The following is the paper in full :

While preparing to remove to Minnesota, friends often said to me, "What are you going to do without flowers in that cold country?" "I am not going to do without; expect to cultivate flowers wherever I have a home." "Well, you will see—too awful cold up there—with no summers to speak of, and frost all the year round—too near the North Pole!"

The first two summers were exceptionally dry, and the winds on the prairie simply abominable. The choice shrubbery, roses and vines we brought with us died—the loss of each one causing a pang, seemed like parting from old friends. The flower seeds I planted in June came up beautifully in September after the rains. The bulbs, many kinds and choice, perished the first winter.

I was disgusted, and turned to the wild flowers, for flowers of some kind I must have. The many beautiful kinds on the prairie, in the brush, and on the shores of Minnie Elk were a source of continued delight.

But in a land of strangers I longed for the familiar faces of the old home flowers. With me flowers are a necessity—thence follows endless painstaking. So I set to work to conquer difficulties, and propose to tell how I

succeeded. First, we set out in the large yard innumerable trees and shrubbery to break the force of the furious winds. It was a rainy season, and they all grew and flourished; and to-day we are living in almost a wood.

We often think the winds do not blow as they used to, but going from home find them still "on duty" on the prairie.

After twelve years experience I am not afraid to try anything, and have had in perfection in one summer three hundred varieties of flowers.

The soil when new is all that can be desired; so rich that even with careless culture the growth is simply wonderful. After a few years it needs enriching if you cannot make new flower beds. I enrich the ground with anything but crude manure, that from a spent hot-bed is excellent; a sprinkle of leached ashes is good; sweepings from the hen house; liquid manure from the barnyard; soot from the stoves, and wherever I find extra good dirt some of it goes to the flower beds, until everything laughs with bloom and beauty. Spade the ground deep and rake thoroughly; but do not sow the seed until the ground is dry and warm. A few kinds need to be put in early. The seasons are very short with late and ungenial springs, and early autumn frosts. To remedy this I sow in a hot bed the seeds of such flowers as bear transplanting the last week in April or first week in May transplanting into the prepared borders the last week in May, or first of June, according to the season. A rainy evening is desirable, but, if ready, do not wait. I take up the plants carefully with as much earth as possible, having previously given them a good watering, and left the sash off nights to harden them. If very dry pour water in the holes, set the plants firmly, pour on more water and draw up dry earth around the stem, leaving a slight depression around each plant.

Next morning cover with paper, leaves, or better still if I have them, invert small flower-pots or tin cans over them; in short anything that will exclude the sun is pressed into service, and the flower beds are "a sight!" Only water every second day, in the evening, unless the weather is very hot and dry. After the fourth day leave them uncovered until ten o'clock. In a week they are growing well and left uncovered all the time. With a push hoe I stir the ground frequently—keeping it loose and mellow, and killing any volunteer plants. With weeds, am not troubled, as none are allowed to seed.

Chickens are excellent scavengers; they have the run of all my flowers, seldom harm anything, but do a world of good, as this ground abounds with "bugs and things." One year some beds were infested with worms and insects eating the leaves and roots of the plants. I left all the dead flower-stalks until spring, raked the beds, burned the trash on them, spread and spaded in the ashes; the result—not a bug or worm to be seen, not a plant destroyed.

I give a list of some Annuals, the seeds of which are sown where they are to bloom:

Abronia.—A pretty trailer; flowers in trusses like the verbena, but smaller; delicate fragrance. Looks best in a bed by itself.

Alyssum (sweet).—Pretty for borders, and delicious in bouquets or vases.

Amaranthus, tricolor.—Very showy, but needs hurrying up to escape early frosts.

Antirrhinum.—Blooms first season from seed; in warm countries is a

perennial; plants sometimes winter well if covered with coarse litter and there is plenty of snow.

Browallia.—A lovely little blue flower. Looks best in masses, but the plants should not be crowded. Cover a little deeper than the catalogues say—on account of drying winds.

Bartonia Aurea.—A most lovely golden colored flower—shines in the sun with a metallic lustre—handsome as a cactus bloom; foliage beautiful; the whole plant has a strange foreign look. I admire it very much.

Coreopsis.—Showy and brilliant; especially the bronze-colored. Are fine as single specimens, but I prefer it in a bed by itself; seeds itself.

Candytuft.—In variety, never saw this flower in perfection until I grew it in Minnesota; sow very early in the spring, and again in June, to have a constant supply for bouquets.

Delphinium.—Some of these are perennial, but bloom first season from seed, winter well with slight covering.

Dianthus (China and Japan Pink).—Biennials, full bloom the first season. The new varieties are beautiful. With a covering of leaves and snow they bear our hardest winters. Plant seed every spring to keep up a supply.

Escholtzia.—(I call that a horrid name!) Profusely blooming plants, with fine foliage; sometimes called California Tulip Flower.

Marigold.—All varieties, are showy plants—provided you like them, which I don't—except *Tageta signata pumila*, the intensely double flowers of which, and lace-like foliage are very pretty.

Marvel of Peru.—A border of this old-fashioned plant makes quite a show, and is very effective as a hedge.

Mignonette.—No flower-garden can be complete without this "Little Darling"—we want a profusion of it everywhere.

Morning Glory.—This vine fairly revels in this rich soil—Such a prodigality of bloom, flinging out its dainty chalices of most exquisite tints by the hundreds.

Perilla.—A very ornamental plant, deep purple foliage. Colors best in full sunshine.

Tropeaeolum or *Nasturtium*.—The dwarf varieties are superb for massing; the tall growing for rock-work.

Nemophila.—All the varieties are beautiful, and colors delicate, are best massed but not too thickly, are profuse in bloom. Seed should be sown early as possible to have them in bloom before the very hot weather, they like partial shade.

Peas (sweet).—These to be had in perfection should be planted *very early* in the spring; from four to five inches deep. If you would have enough to fill your vases all summer plant them in rows in the vegetable garden, hoe often and draw the dirt up high around the roots, give stout brush and pick off all seed pods as they form. Its exquisite tints and delicious fragrance make the Sweet Pea a favorite with all.

Pansy.—Sown early, they flower late in summer; covered with dry leaves make fine plants the second summer. They love a damp, rather shady situation.

Poppies.—Always have poppies!

Portulacca.—Makes a beautiful bordering the first year, is a nuisance the second. Looks well in beds or large clusters. The double varieties look like little roses.

Phlox Drummondii.—Admired by all. Makes a fine show set in masses; plant about eight inches apart. If not allowed to seed will bloom all summer.

Scabiosa.—Rather coarse, but lasting a long time.

Zinnia.—With plenty of room this makes a show; good for a hedge. The flowers lasting about forever; well, I have known them to look fresh and new for three months. The three-cornered shriveled seeds produce double flowers; the large flat ones, single.

I have given the names of only a few of the hardy kinds of Annuals. The following are sown in a hot-bed and transplanted:

Asters.—The new varieties are superb. The plants are as easily transplanted as a cabbage.

Balsams.—These need some care in removing; are fine for a border. I make the soil very rich; spading in strong manure; they are gross feeders. When coming into bloom, water once or twice with liquid barn-yard manure (during a rain) and the bloom is superb. Trim according to directions given by Vick.

Celosia.—I do not admire these much, but always grow a few; the combs are immense.

Petunia.—The blotched and striped varieties are without a rival. Their free-flowering and gorgeous display makes them indispensable. Of these I never save seed; a twenty-five cent packet is enough for three years, and I have no time to waste cultivating inferior kinds of any flower, so always get the best.

Datura Wrightii.—A strong, rather coarse plant, and wants about "all outdoors" to spread itself in. The flowers are immense, delicate color, white shaded with purple, and have a sweet fragrance which florists make a fuss over, but say nothing about the horrid odor of the leaves. They scorn to call them "Jimpsons," but, if not sisters they are first cousins, anyway. However, I always have a few plants, as I like even Ohio weeds.

Verbenas.—These are a specialty with me. Have grown them from florist's plants and from seed, and prefer the latter; I get the best seed and never have a failure. Last summer I had a brilliant show on a bed freshly dug out of the sod; this was done as early as the frost allowed. April 25th I sowed the seeds in a hot bed, and every seed came up. When they were nearly large enough to transplant, I dug up the bed, over which the suds from the wash had been thrown for weeks. In a few days after I wheeled well rotted chip dirt, manure from an old hot bed, fresh prairie soil (taken from the winter's banking around the house and exposed to the action of the frost all winter,) and some lake sand, spread it over the bed, re-dug and raked it smoothly, then sprinkled over the surface four large shovelfulls of sand. In the evening of May 26th there was a warm rain, so I set out the plants—previously hardened off by being uncovered at night—shaded them from the sun for a few days, and they grew on as if they had never been moved. I never saw such growth, such depth of green, such trusses, such brilliant, gorgeous bloom, so many colors,—bright scarlets with large white and yellow eyes, intense crimsons, maroons, creamy fragrant whites, pinks, reds, regal velvety purples to blues of all shades, spicy as pinks, striped, in short, every color I ever saw in verbenas. One morning they were carefully counted—five hundred and twenty-four full blown trusses on twenty-four plants.

The raising of annuals from seed fully repays for all the labor bestowed. One dollar judiciously invested in seeds with ordinary care will give more

satisfaction than twenty dollars worth of bedding plants. The former are the hardy nurslings of sun and shower, the latter pampered darlings with frail constitutions, and almost worthless after coming far through the mail.

Of all flowers not hybrid I save my own seed, selecting from the finest plants and from the first flowers. In this way many kinds come into bloom several weeks earlier. To mark them, tie strings to those I wish to save. The seed of mignonette drops out of the little seed-pod as soon as ripe. I make sacks of thin Swiss-muslin, and draw over the flower stems, tying them at the bottom. The seeds drop into these, and in this way I get all I want.

People often say to me, "It is quite a 'chore' (I hate that word) to have so many flowers; I never have any time." Time can be found, if you know how to manage so that your affairs indoors and outdoors do not clash. And it is a positive recreation, however weary from the never-ending routine and cooking one has to do so much of in this hungry country, to get out among the flowers.

And if you have no "*penchant*" for the endless plattings, shirring, and puffing of the present abominable style of dress, there will be ample time to cultivate all the flowers you have room for.

AMENDMENTS.

The Committee on Amendments to the Constitution and By-laws reported the following additional articles :

ARTICLE 8. The Society may at any regular annual meeting elect as honorary members, any person or persons who may have performed valuable services for the Society, or upon whom the Society may wish to confer special honor. Such memberships shall be held for five years from date of election, and shall be entitled to all the privileges of the Society except voting.

ARTICLE 9. This Society may at any regular annual meeting, and for sufficient services, elect any person or persons as life members of the Society. Such shall enjoy all the privileges of regular members.

Article 8 was adopted. Article 9 failed by a vote of 5 for and 5 against.

A motion was made to refer Article 9 back to the same committee, with instructions to report some way to raise revenue by the sale of memberships. Motion carried.

Mr. Dart gave notice that a discussion on birds would be proposed.

Mr. Pearce mentioned the subject of taxation of nursery stock for discussion.

KEEPING TRANSCENDENTS AND OTHER FRUIT.

A motion was made to invite Mr. Elliot to describe his method of keeping Transcendents so far beyond their season.

The motion was carried.

Mr. Elliot. The process is simple. Pick the fruit carefully when nicely colored, pack in a box that has a whole top, place on ice with a couple of inches of sawdust between, cover with a cake of ice, and then cover the whole well with sawdust. The Duchess, Fall Stripe and Transcendent thus treated keep nicely; Red Astrachan not so well.

Adjourned to 9 o'clock Thursday morning.

THURSDAY MORNING.

REPORT OF THE SECRETARY.

The Society was called to order by the President at 9:30 o'clock.

Communications were read from C. D. McKellup, of Faribault, and from Henry S. Evans, the Secretary of the Montreal Horticultural Society.

The Report of the Secretary was read and accepted and a resolution was passed thanking the Secretary for his full report and the thorough performance of his duties.

The following is the report in full:

Summer Meeting.

GENTLEMEN :—The Secretary has but little of interest to make a report of. The Society held a meeting at the Agricultural College, at Minneapolis, June 28th. The attendance was not large but there was a very fair exhibition of small fruits, vegetables, flowers and plants. Two papers of high character were read at this meeting, one by Prof. Chas. A. Morey, of Winona, on Fungi, touching on blight incidentally, and the other on Horticulture in its relations to education. A very pleasant feature of this meeting was a picnic dinner spread on the University grounds by the ladies of Minneapolis. All who attended this meeting expressed themselves well satisfied, but it was evident to me that the meeting amounted to little more than a meeting of those members of the State Society residing in Hennepin and Ramsey counties. The meeting and exhibition might therefore just as well be held by the horticultural societies of these counties, and hence although heretofore heartily in favor of a summer meeting of the State Society, I am not in favor of another attempt in that direction. The hope that such a meeting and exhibition would finally draw from all parts of the State, does not give much promise of fulfillment. Hence the abandonment of this idea on my part.

Centennial Matters.

Previous to this meeting your Secretary has little to report. A committee from this Society acted in concert with a similar committee from the State Agricultural Society on Centennial matters, but its only action was to organize, to recommend some memorial to the Legislature, and to await the action of that body. The kind of action committed by that body did not furnish apology for further meetings of the committee, and it never met a second time.

In view of the action of the Legislature, it was resolved at the summer meeting of the Society not to exhibit on the Centennial Grounds, but with the Pennsylvania Horticultural Society. You have seen how that resolution was disregarded by the Committee on Centennial Exhibition, and I think we can none of us be too grateful to the committee for doing just as they did. The results certainly justify the course taken. I can say this with good grace, for although Chairman of that Committee, I took no part in its proceedings.

Transactions of the Society.

Within the last year all copies of the Transactions not distributed have come into my hands, except a few retained by the Secretary of State to distribute when specially applied for. These are now placed subject to the order of the Society, and include as follows :

377 copies No. 1, cloth binding.				
612	"	"	2, paper	by J. S. Harris.
221	"	"	3, "	by L. M. Ford.
988	"	"	4, "	by Chas. Y. Lacy.

2,198 copies, total.

What to do with these is a question which has occurred to me. It seems neither right nor proper to hoard them too closely. Thus far, I have used my own judgment in distributing them. I would now recommend that the Society authorize their distribution, so that County Horticultural Societies now in existence shall not suffer through any failure of the Secretary of State to distribute according to law. In other words, so that when any County Horticultural Society shall show that none of its Secretaries have received the volumes prescribed by law, the Secretary of this Society shall furnish the same. I would also recommend that the Society furnish to County Horticultural Societies that may hereafter be found with twelve or more members, the number of copies stated in the law, of the Transactions from the beginning of their publication. This may perhaps be an inducement for the organization of such societies and for the present at least, this Society can afford to do it.

Library.

The library of the Society have not received any important additions the past year.

Membership.

The membership for the year 1876 was much larger than it has ever been before, there being upwards of 75 members.

Expenses.

The expenses of the Secretary's office have been correspondingly large, but at the close of this meeting I think the Society will not only have paid all its expenses, including charges on fruits sent to the Centennial, but will have a balance in the Treasury.

The expenses of the Secretary's office have been as follows :

Postage.....	\$3 63
Postage on Transactions.....	6 56
Copying notes of Proceedings.....	4 45
Express on Proof to and from Printer.....	2 00
Postal Cards for Summer Meeting.....	1 50
Printing same.....	1 25
Telegram to Wis. Hort. Soc.....	1 00
Labor, Mailing Transactions, Postal Cards and Programmes.	1 42
400 Printed Programmes.....	6 00
250 " Envelopes.....	1 25
200 Stamps for Programmes.....	2 00
100 Membership Tickets	1 50
Sundries.....	5 80
	----- \$38 36

Other expenses have been paid as follows :

Wyman Elliot, Exp. Ch. on fruits to Centennial Exhibition..	15 40
J. T. Grimes, Exp. Ch. on fruits to Centennial Exhibition....	6 55
T. M. Smith, Postage and Exp. Ch. on fruits to Centennial Exhibition.....	8 50
	----- 30 45
	----- \$68 81

CHAS. Y. LACY, Secy.

TREASURER'S REPORT.

The report of the Treasurer was read and accepted, and both reports referred to the Finance Committee.

The following is the Treasurer's report:

Report of Treasurer Minnesota State Horticultural Society, for the year ending January 18th, 1877 :

Balance on hand Jan. 20th, 1876 (rec'd from Ex-Treas. Stewart)....	\$7 86
Received from membership fees up to Jan. 16th, 1877	38 00
Received from membership fees from Jan. 16th to 18th, 1877.....	59 00

Total amount received.	\$104 86

Jan. 20th, 1876, paid C. Y. Lacy.....	\$15 00
“ “ “ T. M. Smith.....	3 00
Oct. 18th, “ “ W. Elliot.....	15 40
Jan. 17th, 1877, “ J. T. Grimes.....	6 55
“ “ “ T. M. Smith.....	8 50
Jan. 18th, “ “ Chas. Y. Lacy.....	38 36
Balance on hand.....	17 55

\$104 86

A. W. Sias, Treas.

ELECTION OF OFFICERS.

The next business transacted was the election of officers:

President.

For President, the votes were cast as follows: Smith, 8; Elliot,

4. Total, 12. Truman M. Smith was declared elected.

Vice Presidents.

For Vice Presidents, the votes were cast as follows:

First District—Dart, 7; Buck, 2; Pearce, 1; Harris, 1. Total, 11.

Second District—McKinstry, 7; Jewell, 2; Andrews, 1; Brand,

1. Total, 11.

Third District—Grimes, 7; Elliott, 3; Fuller, 1; Scott, 1.

Total, 12.

E. H. S. Dart, A. W. McKinstry and J. T. Grimes were declared elected Vice Presidents from their respective Congressional Districts.

Secretary.

For Secretary, Mr. Elliott was directed by resolution to cast the vote of the Society for Chas. Y. Lacy, who was declared elected.

Treasurer.

For Treasurer, the Secretary was directed to cast the vote of the Society for A. W. Sias, who was declared elected.

Executive Committee.

For Executive Committee, the five elective members were voted for upon one ballot with the following results:

First ballot—Elliot, 10; Brimhall, 8; Brand, 7; Jewell, 6; Harris, 6; Hollister, 3; Grimes, 3; Lacy, 2; Buck, 2; Kenney, 2; Pearce, 2; Dart, 2; Gould, 2; Stewart, 1. Total for all candidates, 56. Messrs. Wyman Elliot, Wm. E. Brimhall and O. F. Brand, having a majority of the legal votes present were declared elected, and another ballot taken with the following result:

Second ballot—Harris, 10; Jewell, 4; Brimhall, 2; Hollister, 2; Kenney, 1; Scott, 1; Dart, 1. Total, 21.

J. S. Harris was declared the fourth member elected, and another ballot taken as follows:

Third ballot—Hollister, 8; Scott, 2; Brimhall, 1; Dart, 1; Pearce, 1. Total, 13.

U. S. Hollister was declared the fifth member elected.

A motion was made and carried that the President appoint the remaining standing committees.

GAME LAWS.

Mr. Arnold mentioned the bird law as a subject for discussion.

Pres. Smith. Have we not already sufficient laws of that kind if they were only enforced? Whatever the laws considered necessary, it is best to secure the co-operation of the Sportsmen's Club; because its members are the only persons that take any trouble to enforce the bird laws.

Mr. Pearce. I agree with Mr. Smith on that point.

Mr. Arnold. We want a law so stringent as to keep the sportsmen away from our orchards, and not to favor them. I move that a committee be appointed to report on laws for the protection of birds.

The motion was seconded and carried.

ARTICLES ON EXHIBITION.

The report of the Committee on Articles on Exhibition was called for and read by Mr. Grimes, after which it was accepted.

The following is the report in full:

Mr. President and Gentlemen:

Your Committee on Fruits beg leave to report as follows: We have examined all the fruit on exhibition, and find the following seedling varieties exhibited by John S. Harris—Harris Pippin, Julia, Centennial; of grafted varieties—Price's Sweet, Bailey's Sweet, Plumb's Cider, Northern Spy, Ben Davis, Walbridge, Seek-no-further. Also, a seedling crab from Transcendent; very large and valuable as a cooking fruit. We find the Julia one of

the best seedlings yet brought to notice; said to be a seedling from Fameuse; size, above medium; color, a deep mottled red or dark cranberry. The Harris Pippin, a seedling from the Golden Pippin, large; color, somewhat like the parent; quality, good.

W. E. Brimhall exhibits Haas, Wealthy, Molly, Alexander, Soulard, Hyslop, Gen. Grant.

P. A. Jewell exhibits Plumb's Cider, Saxton, Haas, Sweet Seek-no-further. Of Hybrids—Malden's Blush, Gen. Grant, Conical, Quaker Beauty, Orange, Beecher's Sweet, and an unknown apple.

John Hart exhibits Bailey's Sweet, Utter's Red, Perry Russet, Fameuse, Yellow Bellflower, Saxton, Duchess, Early Joe, Ben Davis, Plumb's Cider.

A. W. Sias exhibits Wabasha, Elgin Beauty, Rollin's Pippin, Rollins Prolific and two unknown seedling apples; all seedlings from Wabasha county and all winter varieties. The Rollins Pippin is a late keeper.

Wyman Elliot exhibits Transcendent Crab, Pride of Minneapolis. Four plates of the Transcendent exhibited by Mr. Elliot have been well preserved and present a fine appearance.

Mr. Pearce exhibits Seek-no-further and of Seedlings No. 2, No. 3, No. 4, all winter varieties.

Mr. Mills exhibits the Alaska seedling apple, fair in appearance but too far past its season to judge of its quality. We also find the Alaska Crab on the table—an Iowa seedling, but in the same condition as the Alaska apple. Its season is probably fall.

S. H. Kenney exhibits the Ben Davis.

In the collection of John Hart we find several seedlings, one of which is now firm and hard, evidently a very late keeper, rather below medium size, but of fair quality.

Our attention was attracted to some samples of fruits and vegetables contributed by Mr. Wyman Elliot, of Minneapolis, which were preserved by a new patent process, which, if worth any thing at all, is worth a great deal. The articles on exhibit consisted of apples, grapes, cranberries, sweet corn and tomatoes, which were preserved before the State Fair and which seemed to be as fresh as when gathered, and to all appearance well preserved.

Busch, Hollister and Carter, of St. Paul, had upon our tables a fine collection of vegetable garden seeds, grown in our own State, which we think worthy to recommend. The time has come when our gardeners should begin to look nearer about home for their seeds and not depend upon foreign seeds sent in from year to year, many of which have remained on the market until they have become entirely worthless.

Seth H. Kenney, Morristown, Rice Co., presented a sample of sorghum syrup which for appearance and quality we have not seen equaled. It was thick and clear and had more the taste of good strained honey than of molasses. The variety of cane from which it is made is called the Early Amber. Mr. Kenney states that he manufactured the past season 1,082 gallons equal to that on exhibition, including several barrels of grained sugar. Why is it that we cannot produce our own sweets when we can grow the material and make them cheaper than we can purchase abroad.

HART'S SEEDLINGS.

(The following description and history of two of Mr. Hart's Seedlings has been received since the meeting :)

WINONA, March 15, 1877.

C. Y. Lacy, Esq., Secretary of State Horticultural Society :

DEAR SIR: In reply to yours of the 7th, I here give you a brief description of the two Seedling Apples we sent to the winter meeting.

No. 7.

First, we will describe No. 7, which is a round yellow apple, and good in its season, from August to October. The tree is one of the hardiest we have got; is one of the lot of seedlings sown and raised by Mr. Robert Pike, of Minnesota City, in 1859. The tree is a handsome growing tree, close, upright head, and bears fruit on the end of the twigs.

No. 11.

We will now describe No. 11, which is conical shaped; a dull red color, very hard and would undoubtedly keep one year. We will not describe its quality, as you have seen it and had a chance to test it. It is all that remains of four quarts of apple seed that we sowed in 1861, and it was by accident that one has been saved. We were plowing up the bed of seedlings, and one of our children picked the apple tree up and planted it among a long row of plum trees, where it has stood since without any care or attention. It is exposed to all the heat of summer and the cold of winter, growing on the hillside, facing the southwest. You may judge what care we have taken of the apples. When receiving some letters shortly after the winter meeting of the State Horticultural Society, we went out to look at the tree, and found several apples froze on the tree still. The tree is hardy. We have had the Yellow Siberian crab-trees killed, which stood near it. We have several other seedlings, which we think are really good. We think, if the weather keeps on favorable as it has so far, we will be able to show some as good seedlings as have been raised in Minnesota.

Respectfully yours,

JOHN HART.

CATALOGUING FRUITS, &C.

The report of the Committee on Cataloguing Fruits and Ornamental Trees and Plants was called for, and given by Mr. Elliot at the request of the chairman, Mr. Jewell. The report was accepted.

A motion to adopt it was not seconded.

A motion was made to refer the subject of the report back to a committee consisting of the same persons, to report one year hence.

A motion was made to amend by adding "and that the committee be empowered to act for the Society with reference to the subject of their report and the meeting of the Pomological Society."

Both motions were carried.

REVISION OF APPLE LIST.

A motion to take up the revision of the apple list was carried.

Duchess, Wealthy and Tetofsky.

The list of last year was read, and a motion made to adopt it.

This motion was amended so as to read, "adopt the list for general cultivation" (Duchess of Oldenburg, Wealthy and Tetofsky.)

Motion carried; 9 for and 1 against.

Mr. Kenney. Is the Tetofsky considered better than the Haas? In my orchard the Tetofsky was injured in 1873. Many trees died, and the remainder are but just recovering.

A motion was made to reconsider the last action, and carried.

A substitute was then offered that the Duchess of Oldenburg and Wealthy be recommended for general cultivation, and the Tetofsky for planting in limited quantities.

Motion carried unanimously.

Mr. Dart. Have had the Tetofsky in bearing for several years.

Mr. Grimes. So have I. It is a small tree and takes but little room.

Haas.

Motion was made that the Haas be taken from the list recommended for trial and put on the list recommended for general cultivation.

Motion carried; 8 for and 4 against.

Mr. Jewell. That is a mistake. You can't find a healthy tree of any age that fruited previous to the winter of 1872-3.

Mr. Sias. I believe my Haas trees are as hardy as the Tetofsky.

Mr. Dart. It is an unfair test to ask for old trees. We have none of any kind. We have many that are quite hardy and profitable while young, but do not retain their vigor to old age. The

Haas in orchard stood the hard winter as well as many others, and in the nursery stood a little better than the Wealthy.

The meeting adjourned for dinner, after which the discussion was continued.

THURSDAY AFTERNOON.

POMOLOGICAL SOCIETY.

Before proceeding with the Apple List, the following business was transacted:

A motion was made that a committee of three be appointed by the chair to collect fruits for the next "biennial session" of the American Pomological Society.

The motion was carried.

(Messrs. Elliot, Harris and Sias have since been appointed by the President.)

TAXATION OF NURSERY STOCK.

Mr. Dart introduced the following preamble and resolution:

WHEREAS, It has been the policy of our State to encourage tree planting by legislative enactments; and

WHEREAS, We discover what we consider a strange discrimination against nurserymen, in taxing as personal property their growing stock while other crops are exempt from taxation; this, one of the most uncertain of all crops, often proving an entire failure in a financial point of view, seems to be selected for special discouraging indorsement; therefore,

Resolved, That we ask the legislature to so amend the tax law that crops of growing trees, if not encouraged by bounty, shall at least receive as favorable consideration as other growing crops.

The resolution was carried and the Secretary was instructed to forward a copy of the same to A. W. McKinstry at St. Paul, with the request that he would secure such action as could be obtained.

(The resolution was sent to Mr. McKinstry, as above directed, was presented by him, and was referred to the Joint Committee on Taxes and Tax Laws.)

REVISION OF APPLE LIST RESUMED.

Haas Again.

A motion was made to reconsider the action on the Haas, and to place it on the list for favorable localities.

Mr. Jewell. Think there are some situations where it ought not to be planted.

Mr. Dart. Think the Haas entitled to the same place as the Duchess and Wealthy. Think it one of our most promising trees.

Mr. Pearce. Think it compares well with the Wealthy. Have seen nothing to beat the Haas. It stands the winter well, bears early, and will live as long as any. It bears well when top-grafted.

Mr. Sias. I top-worked some Transcendents with Haas in the spring of 1872. They grew more than six feet the first year. Grafted others at the same time, but the Haas did the best. It makes a good union with the Transcendent.

Mr. Humphrey. Haas trees bore remarkably well in 1872. Think the Haas will always pay on good soil.

Pres. Smith. Have not had a favorable experience with the Haas.

Mr. Arnold. Have had some Haas trees killed. Think it should be planted only on favorable soils and then protected.

Mr. Jewell. Have budded the Haas on Transcendents and had good results. Would prefer to graft in the top on small limbs.

Mr. Dart. Think the weight of the testimony in favor of the Haas.

The motion to put the Haas on the list recommended for "general cultivation in favorable localities" was carried.

Plumb's Cider.

A motion was made to put Plumb's Cider on the same list.

Mr. Dart. I would not put it on the same list.

Mr. Jewell. I have lost more of Plumb's Cider in the nursery than of the Haas. They say in the southern part of the State that it is one of the best as an old tree.

Motion was here made that in order to expedite business members be restricted in their speeches to three minutes, and be allowed to speak but once on each question. Carried.

Mr. Pearce. Mr. Wilcox, of Trempealeau, says Plumb's Cider is about as good as there is.

Motion on Plumb's Cider carried; 7 for and 1 against.

Melinda.

Motion was made to place the Melinda by the side of Plumb's Cider.

Mr. Jewell. Its hardiness has been much exaggerated. The oldest trees are on the grounds of Mr. Rollins. Two of these are dead and 3 others are dead on one side. The Duchess in the same row is in good condition. In the nursery the Melinda killed back one-third to one-half while the Duchess remained perfect. On the grounds of Mr. Sias the trees are in a dying condition.

Mr. Sias. Those trees were injured, one by the cultivator and the other by borers.

Mr. Brand. A high price was paid for the scions at first, and these were cut short, which exposed the young trees to root-killing. The Melinda is recommended for the orchard and not for nursery-men. In the orchard it will, notwithstanding its faults, give as much fruit as any other variety.

Mr. Jewell moved to amend to place on the list recommended for "most favorable localities."

A discussion followed in which Messrs. Jewell and Brand bore the burden.

Mr. Dart. Am in favor of keeping on the list for trial. If placed on the list for most favorable localities, it might be done an injustice.

Motion was made to amend the amendment and let the Melinda remain on the list for trial.

The last was carried; 8 for and 1 against.

Stewart's Sweet, Walbridge and Peach.

These were unanimously allowed to remain on the list for trial.

Price's Sweet.

A motion was made to take Price's Sweet from the list for favorable localities and place it beside the Haas on the list recommended for general cultivation in favorable localities.

Motion carried; 5 for and 2 against.

Saxton.

A motion was made to place the Saxton on the same list.

Mr. Jewell. I set the Saxton at the same time that I set the

ANNUAL REPORT.

Plumb's Cider, and now they are half dead. They died in the forks of the tree. It is not nearly so hardy as Plumb's Cider. The fruit is small and not a long keeper.

Mr. Sias. Have had poor success with it as a root graft. It has done tolerably well top worked on crabs.

Mr. Dart. Have had good success with the Saxton compared with Plumb's Cider.

Mr. Kenney. Had ten trees before the hard winter, and lost two.

Mr. Brand. I have 200 trees. They bear young and produce well.

Motion carried; 6 for and 2 against.

St. Lawrence.

Allowed to remain on list for favorable localities.

Utter's Red.

This also was allowed to remain on the list for favorable localities.

Mr. Pearce. It grows in locations not the most favorable. The fruit makes a good appearance and sells well.

Fameuse.

Motion made to place on the list for favorable localities.
Carried unanimously.

Talman Sweet.

Motion made to place on the list for favorable localities.

Mr. Dart. I set four trees, of which three are now living. It is not a good nursery tree. Will do well in favorable localities. In Wisconsin, before the hard winter, it was considered one of the most hardy. The fruit is smooth and keeps well.

Pres. Smith. I set four trees, and in the season of 1872 they bore from two to six barrels each. The following winter used up two of them, and later one more died.

Motion carried; 4 for and 1 against.

Alaska.

Mr. Grimes. Have had a few trees for several years. Don't think it much hardier than the Fameuse. The tree is a slow grower and not very fine in appearance.

Allowed to stand (recommended for trial by amateurs and pomologists.)

White Astrachan.

Allowed to stand (recommended for general trial throughout the State.)

Julia.

Motion was made to recommend for trial by amateurs and pomologists.

Mr. Kenney. It is a first-class fruit.

Motion carried; 7 for and 1 against.

Molly.

Motion made to place on the same list.

Mr. Grimes. It is placed below its merits. It produces more fruit than the Wealthy, and the tree appears as hardy. Have it in bearing, as has also Mr. Brimhall.

Motion carried unanimously.

Rollins' Pippin, Rollins' Russet, Rollins' Prolific, Elgin Beauty, Wabasha, Viola, Queen of Elgin.

Motion was made that these be placed on the list for general trial.

Mr. Jewell. In the Rollins Russet I have no confidence. It is very subject to blight.

Mr. Sias. Have been told that it was worthless because of blight. I therefore thought I would investigate this matter, and found in 1,000 or 2,000 trees of this variety one, two or three affected by blight. The trees of this variety were the finest in a nursery of 50,000 trees.

Have been told by another party a similar story of the Wealthy, which also is not true. I believe that new varieties of fruit must

undergo the same ordeal that inventors do until the nurserymen get a stock of them.

Mr. Jewell. I think the Elgin Beauty ought to go on the list for general trial, but not the others.

Mr. Sias. Mr. Richardson has more of the Rollins Russet than any one else. He says it is subject only to the blight, and he is not discouraged on that account.

A motion was made to amend by placing all but the Elgin Beauty on the list for trial by amateurs and pomologists and Elgin Beauty on the list for general trial.

The amendment was carried unanimously, and then the motion as amended was carried unanimously.

Clawson and Kimble.

Mr. Pearce. Mr. Clawson, of New Haven, has four trees grown from sprouts from a tree raised from the seed. The trees are perfect, although growing in an unfavorable locality. The fruit is better than the Seek-no-further. He calls this variety the Clawson.

These sprouts were planted about 20 years ago. Last fall I visited these trees, and found three of them loaded unusually heavy with fruit resembling the Yellow Bellflower in outward appearance. On testing them, I found the apples fine-grained, juicy, mild subacid, excellent for eating and having a small core. I gave the trees a thorough examination, and found them perfect, except a slight injury in the forks caused by the winter of 1872-3. The fourth tree was taken up and set in another place when eight or nine years old. It did well until run into with a plow, which broke the roots loose and caused half the tree to die. The remaining half hung full of fruit last year. The Kimble is another seedling growing in the same town. The seed was planted by Mrs. Kimble some seven or eight years ago. The tree is very vigorous and healthy, and bore about half a bushel of fruit last year. The fruit is of very good quality and keeps all winter.

A motion was made to place the Clawson and Kimble on the list for trial by amateurs and pomologists.

The motion was carried unanimously.

Hart's Seedlings.

A motion was made that the two seedlings of Mr. Hart go on the same list. One was a dull red, shaped somewhat like the

Gillflower, and marked No. 11. The other was yellow and sweet, and marked seedling No. 7.

The motion was carried unanimously.

CRAB APPLES.

Soulard.

A motion was made to strike out the Soulard entirely.

Motion carried; 6 for and 1 against.

Meador's Winter.

A motion was made to place Meador's Winter fourth on the list for general trial.

The motion was carried unanimously.

Hesper Blush.

A motion was made to place Hesper Blush on the same list.

The motion was carried; 3 for and 1 against.

Whitney's No. 20.

A motion was made to place Whitney's No. 20 on the list for general trial.

Mr. Dart. It is not well enough known for that.

Mr. Pearce. It is of great promise; the season is August, and the size large.

Mr. Jewell. It has not been fruited in this State.

Mr. Brand. The bark has burst in winter on trees three and four years old.

The motion was lost; 4 for and 4 against.

It was moved to recommend for trial by amateurs and nursery-men.

The motion was carried unanimously.

Alaska Crab.

A motion was made to place the Alaska Crab on the same list.

Mr. Brand. It is evident to all that it is a Fall crab, but it has been advertised as a late Winter crab.

Mr. Sias. I wintered it last winter and it stood as well as any crab. Last year was not so fair a test as some, however.

Mr. Kenney. I have bought fifty trees of it.

The motion was carried ; 7 for and 2 against.

Blight on Crabs.

The members were called upon to state their experience with Blight on Crabs.

Mr. Brand. As to Meader's Winter, I think Mr. Harris' experience is confined to his own grounds. I have fifty trees coming into bearing. I saw no blight on the Orange till this year. It is mostly twig blight, in one instance only on the trunk. I consider it substantially free. The General Grant is subject to blight, but has never injured badly. The Early Strawberry does not blight to injure it. The Conical has not been injured. The Quaker Beauty blights worse. The Maiden's Blush does not blight to injure. Aiken's Striped Winter I do not remember to have seen blighted to injure. The Minnesota I have seen blighted some but not, on my grounds, enough to injure it. I think Mr. Jordan's were on Transcendent stocks, and caught the blight from them. Of Palmer's Sweet I have five bearing trees, and it has never blighted at all. Beecher's Sweet I have in bearing, and it has not blighted with me.

Mr. Jewell. The Minnesota is as free as any tree that ever lived. The only ones mentioned that blight are General Grant and Meader's Winter, and the last not seriously except while young. The original tree stands in the vicinity of blighted trees. I have had Meader's Winter three or four years old badly injured. The General Grant in the nursery is badly injured, but if it stands to eight or ten years old it will not seriously injure. The Early Strawberry I have not seen to blight very much. The Quaker Beauty is not inclined to blight very much if away from the Transcendent. It stands well in the orchard and as an orchard tree it is safe. The Maiden's Blush blights some but I have not had it badly injured.

Meader's Sweet Russet.

Mr. Brand. I move to add Meader's Sweet Russet to the list of Crabs for general trial.

Mr. Jewell. It is not equal to Beecher's Sweet. It is not so productive nor of so good a quality.

Mr. Brand. I have eight bearing trees. It is a fair keeper, will keep into November, of better flavor than the Beecher's Sweet but the latter is more productive.

The motion was carried; 5 for and 2 against.

Sylvan Sweet.

Mr. Sias asked about the Sylvan Sweet Crab.

Mr. Jewell. It is no crab at all, but a small inferior seedling of the common apple and not hardy.

Mr. Sias. I received a few cions and grafted 500 stocks this winter. I judged from the cions that it was a crab and hardy.

Mr. Brand. I have met a gentleman who had worked for the proprietors of the Sylvan Sweet Crab, and he said the original tree was not hardy.

Brier's Sweet and Northfield Beauty.

Mr. Jewell. I would mention Brier's Sweet Crab. I have never seen a better tree than the original. It is erect and vigorous, but not a very early bearer. The quality is good but the season is short. The tree is hardy enough and is worthy of cultivation to some extent. Also the Northfield Beauty Crab. The fruit is about the size of the Haas but of better quality. If a crab and hardy enough for Minnesota will be a great acquisition.

Virginia.

A motion was made to recommend the Virginia Crab for trial by amateurs and pomologists.

The motion was carried unanimously.

Brier's Sweet again.

It was moved to recommend Brier's Sweet for trial by nursery-men and pomologists.

The motion was carried; 6 for and 1 against.

It was moved to close the subject of crabs.

The motion was carried.

NEXT MEETING.

Mr. Pearce made a motion to hold the next annual meeting at

Rochester. Some one asked if any guarantee could be given, in case the meeting were held there, that the Society would not be run by Mr. Jordan. This led to a somewhat extended discussion, of which Mr. Jordan was the chief subject, after which the motion was carried unanimously.

ORGANIZATION OF COUNTY HORTICULTURAL SOCIETIES.

The report of the Committee on the Organization of County Horticultural Societies was read. The report was accepted, and the committee continued with power to act.

The report was as follows:

Your committee report progress, and are in favor of publishing a pamphlet briefly enumerating the advantages of horticultural organizations, and the relations of the same to this Society, their rights under the laws of the State, the method of organizing such societies, and a brief constitution for their use.

CHAS. Y. LACY,
W. T. SCOTT.

REPORT ON PRESIDENT'S ADDRESS.

The report of the Committee on the President's Address was read and accepted. It was as follows:

Your committee report in favor of referring the whole subject of an exhibition by the Horticultural Society to the Executive Committee, with power to act.

REPORT OF MR. LATHAM.

The committee acting with the State Agricultural Society made a verbal report, but the Secretary failed to get the substance of it. The report of A. W. Latham, Esq., of Excelsior, of the General Fruit Committee, was read and ordered on file for publication.

The following is the report in full:

To the Minnesota State Horticultural Society:

Review.

The labor of another year has been crowned with success, and our further efforts in growing the apple and the grape have produced results most encouraging. While there are but few varieties of the common apple (*pyrus malus*) that can be planted with safety and certainty in our orchards,

the experience of over twenty years, including one or two exceptionally severe winters, has proved that there are a very few kinds which are worthy of very general culture. It was fortunate for the orchards of Minnesota that the severe winter of '72-3 was not longer deferred. Planters in this locality were setting or about to set large numbers of such varieties as Ben Davis, Fameuse, Pewaukee, &c., of which single trees were to be found looking very promising and bearing fair crops of fruit. Much, however, was yet to be learned by the settler in this yet comparatively new and untried climate. The lesson came with sudden severity, but none too soon; and our hopes of fair orchards of those varieties of apples whose names were familiar to us of old, were quickly blasted. But though the list of eligible kinds is greatly curtailed, it still contains those of merit, as the Duchess of Oldenburg, the Tetofsky, and above all, Minnesota's own offspring, the new and beautiful Wealthy. There are a few other sorts than these, not so hardy, which are doing pretty well about here and may, no doubt, be planted with profit, such as the Haas, Plumb's Cider, &c.

Duchess.

Of the Duchess it cannot be said that it came through the "hard" winter totally unscathed, but I do not remember to have seen a tree in this section that I believe to have been killed back in the top, as the term is usually applied, or otherwise injured above ground, except upon the trunk or main branches on the S. or SW. sides. There were occasional trees the following spring, as indeed there have been other springs, before and since, which had the appearance of being injured uniformly all through the tree, some of which ultimately withered and died, while others recovered. Their appearance would indicate injury to the root, although individual trees, weakened from special cause, may have succumbed to our rigorous climate.

In regard to the number of bushels of the variety ripening in this section the past season I can only conjecture and should place the amount at not far from 400 bushels, of which the pioneer of fruit culture, Peter M. Gideon, contributed nearly one-half. Most of the bearing trees are young, but few being 10 or 12 years of age and consequently the average per tree is low.

Tetofsky.

Of the Tetofsky, I can say but little, as there are few trees of this kind bearing here, except that it seems to be nearly, perhaps quite, as hardy as the preceding. Its fruit is such a very short keeper that it has little merit as a market variety, and a very few trees are as many as any planter has use for.

Wealthy.

In the *Wealthy* are centered many hopes, and its ultimate success with us is very nearly assured. I speak thus cautiously of this beautiful apple as an experience of many years in tree culture in this latitude has made me

exceedingly, perhaps over, cautious. Most of you have seen and tasted its fruit, and will agree with me that it is of excellent quality, and for beauty of appearance unsurpassed. In regard to its season, there is some dispute. I can only say that I have kept the fruit without difficulty through the winter, and at this time (Jan. 15th) the specimens in my cellar have as fine an appearance as when gathered, and will doubtless keep till March. I believe that if allowed to ripen on the tree, picked carefully, barreled, and put in a dark, cool cellar, they will be in fine condition for use during the latter part of the winter; but with the care ordinarily bestowed upon apples in latitudes where the fruit is more plentiful, they will not keep much after January 1st.

The tree is as hardy as the Duchess, and as far as my own observation goes, not nearly so liable to injury upon the trunk. It is a very satisfactory tree to most planters in a new country, who are not willing to live and wait, as in the "good old time." With care, it usually fruits at five years, or, at most, at six years of age.

It is to be regretted that an imperfection must be recorded against this valuable variety; but truth compels the statement that it is somewhat liable to blight; not, indeed, to any such degree as the crab family, but this being a scourge before which we are comparatively powerless, we dread its most distant approach. However, a large proportion of the Wealthy trees in this section, of an age to be productive, are top-worked upon Transcendent or Hyslop, and have suffered from blight through the influence of the stock, or from being planted in contiguity to trees of the crab kind. Wealthy grafted upon common apple stocks and standing apart from crab trees are comparatively uninjured. Indeed, no crab tree should ever be planted near an orchard of standards, as no doubt longer exists of the contagious character of the blight. This disease has not thus far attacked our standard trees to any such extent as to deter planting, but only to confirm the necessity of certain precautions as to tillage, enriching, &c.

Probably the few Wealthy trees of bearing size have produced 40 or 50 bushels the past season. A large increase is looked for the coming year.

Crabs.

Our crab orchards and nurseries have suffered this year, as before, from blight. While it cripples bearing trees more or less, it rarely kills, and great hopes are entertained that like the locust scourge, it may wear itself out and depart.

Russians.

Many new Russian varieties have fruited the past year, and look well, but they have not yet stood the test and are only regarded with hope.

Seedlings.

Many new varieties of seedlings, crabs, standard, and crosses of the two,

have also borne fruit, mostly upon the farm of Mr. Gideon. Some of these have much to recommend them in the direction of beauty and quality of fruit, hardness of tree, &c. Not to specify individual trees, suffice it to say, that the success in this work is such as to encourage further effort, and to leave no room for doubt that ultimately kinds will be originated that will be perfectly adapted to our peculiar climate, and of a quality of fruit worthy of general culture.

Grapes.

The grape crop here is as fine as usual, and I believe larger than heretofore. I leave this subject to my co-laborer, Mr. F. G. Gould, who makes it the subject of a special treatise.

Congratulations.

In conclusion, the Minnesota fruit-growers have good cause for exultation, and we must be faint-hearted, indeed, who falter now by the way. There have, indeed, been times when the clouds lowered, and there seemed certain prospect that perpetual darkness would enshroud us. These clouds are being withdrawn, and we can believe that in the not distant future the glorious sunlight of an assured success will dispel their latest shade. Let us clasp in encouragement each his fellow's hand, and press forward earnestly towards the end to which we are devoted.

Yours, fraternally,

A. W. LATHAN.

EXCELSIOR, Minn., Jan. 15, 1877.

EVERGREENS.

A motion was made that the list of Evergreens stand as adopted last year. The motion was carried.

REPORT OF GEO. H. FISH.

The report of Geo. H. Fish, Esq., of Sauk Centre, of the General Fruit Committee, was read and ordered on file for publication.

The following is the report in full:

SAUK CENTRE, Stearns Co., Minn., Dec. 16, 1876.

Chas. Y. Lacy, Esq.

DEAR SIR: Your card of the 7th ultimo, reminding me of my duty to the Society, came in due time but in my absence. I wish to assure you that I have a lively interest in horticulture, and wish soon to see it receiving its deserved attention by the people of all parts of our State. I believe a gen-

eral attention to it would add to the general health of, and be a source of profit to the people, and also tend to mental and moral culture, by opening up an attractive field for the exercise of observation and thought, and of true tastes and sympathies. Imported fruits are always expensive items of consumption, compared with the expense of raising such as our climate will admit of, to say nothing of the vastly inferior quality of most of the imported, canned and dried fruits. This county, and those west and north, have been backward in taking the initiatory steps in the enterprise of fruit raising, in the way of setting out trees and plants; likely owing to the prevailing impression that this part of the State at least is too far north, and consequently the climate too severe to admit of a chance for much success.

Apples.

Still, in the successive past few years, many have ventured to set out quite largely of the Transcendent and Hyslop trees, mostly of the former, and the two last seasons the oldest trees have proved productive. Last fall there was an abundance of Transcendent apples in town for sale at \$1.25 a bushel. It is very rarely that any of the tried, standard trees have stood the climate so as to perfect any desirable growth.

Small Fruits.

But few have made a commencement with small fruits, and there seems to be a general want of knowledge as to their importance, and indifference in regard to their raising, though enough has been done to prove that with care they can be profitably raised. I had last season half an acre of raspberries; about two-thirds yearling plants of the various kinds, the rest two year old, on highly manured sandy land, all bearing well. I have the Seneca, Doolittle, Davison's and Mammoth Cluster, of the black-caps. Part of them were mulched in fall and stood the winter the best. I am not yet certain which are the hardest and most prolific. The Seneca and Davison's Thornless certainly have done well. I have two rows each of the Philadelphia Red and Purple cane. The Philadelphia has stood two winters, with ground almost bare of snow, and no protection, without killing at all, and last season bore prodigiously. The Purple Cane stood the winter nearly as well, and fruit is very delicious, but bore nothing like as well as the Philadelphia. I keep the red bushes pinched back severely, the same as the black, making them stocky, which may account for their hardiness. I know of several parties who have cultivated the black-caps for a number of years successfully in this vicinity, and for eating when fresh in summer, and for canning and drying, every farmer who regards economy and the comfort and health of his family, should raise them. If apples of standard varieties are uncertain, they and strawberries with care are not. Of course, some years are singularly unfavorable. Last winter there was but little snow, and many warm days, thawing the frequent light falls to an ice, which completely covered the beds, and in most cases so bound the canes as to destroy

the fruit sets, if it did not kill the plants, so that in this part of the State most of the beds were a failure. Still, enough have been raised in past years to prove that with care they can generally be relied on in this part of the State. They are the *ne plus ultra* of canned fruits, when canned properly at home. The same is true of drying them. But comparatively very few are yet raising them, and most will persist in getting plants from old adulterated beds of Wilsons, or those entirely spurious because they are free, rather than paying a fair price for true plants. This is owing mainly to the fact that people are generally ignorant of the tendency of superior kinds to be run out by those that are inferior when not cared for in that particular. Should not the exquisite relish that all people have for berries of various kinds, the tendency to social enjoyment in their eating at table, their extreme healthfulness, the source of delight to old and young in seeing them grow and produce so bountifully under good care, and the disappointments so common to children in their futile tramps in search of inferior wild ones to gratify their natural yearnings, induce every farmer and gardener not to delay their cultivation, who has a true desire to please and to make home and society pleasant?

Planting costs but little, the care required is not great nor irksome to a true taste, and remuneration *quick* and *profitable*. Would not short essays read before the Society at different times in future, as in the past, and published, discussing which are the best kinds, and what are the *especial* modes of culture necessary to their highest development and productiveness, thus keeping the subject before the minds of the people, and giving them instruction, be likely eventually to prove of eminent usefulness to the public?

G. H. FISH.

TRANSACTIONS NOT RECEIVED.

A motion was made that members who have not received the Transactions of the Society shall be entitled to the missing numbers by applying to the Secretary and forwarding postage.

The motion was carried.

The meeting adjourned to meet at 7:30 P. M.

THURSDAY EVENING.

DELEGATES TO MEETING OF AGRICULTURAL SOCIETY.

The meeting was called to order at 7:45.

A motion was made that the President appoint two delegates and attend as a third himself.

The motion was carried, and Messrs Elliot and Dart were appointed.

A motion was made that the President have power to fill vacancies in the delegation.

The motion was carried.

HONORARY MEMBERS.

A motion was made that Mrs. C. O. Van Cleve, of Minneapolis, be elected an honorary member of this Society. Carried.

A motion was made that Miss Hortense Share, of Rosemount, be elected an honorary member of this Society. Carried.

SUMMER MEETING.

A motion was made to dispense with a Summer meeting this year. Carried.

REPORT OF MR. CARTER.

The report of T. G. Carter, Esq., St. Peter, of the General Fruit Committee, was read and ordered on file for publication.

The following is the report in full:

ST. PETER, Nicollet Co., Minn., Jan. 16, 1877.

Prof. Chas. Y. Lacy, Secretary State Horticultural Society:

Small Fruits.

DEAR SIR: I cannot give a report covering the whole district, but will confine it to what has come under my observation in this county, and one orchard in LeSueur county; which, by the way, is not in my district. Last winter seems to have been hard on strawberry vines more than one year old, whether covered or otherwise. The young vines from the last year's runners were all right. The strawberry and raspberry crops were not up to the average, I think; some not half a crop. Of black-cap raspberries, the Doolittles constituted the main crop, other kinds being but little cultivated. With me, however, the Mammoth Cluster and Seneca were the most productive, and the fruit the largest. The Philadelphia red bore a very fair crop. With me they came through the winter better than the blacks, and yielded 100 per cent. better. The markets in this vicinity were better supplied than in former years, and prices consequently lower; more people having engaged in the business of raising small fruits than ever before.

Of strawberries, I think the Wilson yielded best. The drouth cut both crops short.

The currant crop was larger than usual, and they sold for lower prices than heretofore obtained.

Gooseberries were largely in excess of the demand.

Plums.

Plums were not so plenty, and not so good as usual, except in a few instances. There are a number of excellent varieties of the wild plum in the county, which have been cultivated and many of them are of a large size.

The Miner is about the only tame plum raised in the county. It is very late and should be planted on a light warm soil in order to ripen well, when it is hard to find its equal. Mr. Bergen, of Lake Prairie, has two trees of the German prune, six years old, which have borne fair crops of fruit for the past two years, and are healthy and flourishing. He also has several choice varieties of the native plum. He claims that spreading fresh stable manure over the ground under his trees once in two or three years protects his plums from the curculio. Also, that an application of pine tar to all kinds of fruit trees which are diseased in the body or branches is very beneficial. This does not refer to blight, as he is not troubled with it, but probably to the damage to the bark, wounds from borers, &c.

Apples.

The crop of Transcendent apples has been very large, so much so that large quantities have been made into cider. Within the last four or five years they sold here at four dollars a bushel. Notwithstanding that this apple is very much subject to the blight, I believe the time is not far distant when we shall export dried fruit, and that it will command a better price than the best quality of eastern dried apples. Consequently, I believe it should be generally cultivated.

It does not need to be pared, I am told, and the core can be removed by a simple tin punch.

The Hyslop also makes a good dried apple, and needs no peeling, although the better for it, of course.

The blight has done no damage, so far as I have heard, except in the orchard of Ernest Meyer, of this place, where it attacked his large trees some two years ago, mainly Transcendents, I think, but has not touched two and three years old trees. Mr. S. B. Carpenter, of Lake Emily, across the river from St. Peter, in LeSueur county, also had a touch of the blight two years ago. It struck one row of young trees on highly cultivated new ground. He had used leached ashes freely on the balance of his orchard, and never had a tree touched. He applied them to this diseased row and they have never been troubled since.

By the way, Mr. Meyer had nine or ten varieties of apples on exhibition at our county fair, among which were some Fameuse and several seedlings of promise. Mr. Carpenter raised about twenty-five different varieties—the

Duchess, of which he had about twenty-five bushels; Haas, three or four bushels; Red Astrachan, one bushel; a sweet apple, supposed to be Talman Sweet, one bushel; about twenty of Transcendents, and more or less of Tetofsky, Fameuse, Golden Russet, Jeniton, Small Romanite, Maiden's Blush, Hesper Blush, Quaker Beauty, and twelve other varieties, including four Seedlings, (standards,) and an early winter Pippin, fruit as large as the Duchess, which last has stood ten years, now fruited for first time, and is hardy so far. Two of the Seedlings bear splendid fruit, are sixteen years old, but not quite hardy. The Golden Russet, Talman Sweet, Jeniton, Small Romanite, and Red Astrachan were damaged by the hard winter of 1872 and '78, and have not recovered yet. Haas are six years old, and were not hurt by the hard winter referred to.

The Duchess, young and old, are black on the south side, also some of the Transcendents. Mr. G.'s orchard is located on the south-east side of Lake Emily, and being on western border of the Big Woods, is somewhat protected, although the timber is cut off on north side as a general thing.

The Duchess is damaged on the south side of body—very few people taking care to give them protection from the sun in winter. I am satisfied that this and the borer kill many trees, and it is charged to hard winters. Some trees of Stewart Sweet, not less than sixteen years old, are bearing good crops—trees perfectly healthy and hardy.

Some trees in a neighbor's orchard, bought (of Moulton) for Aiken's Green Winter, seem to be perfectly hardy, while others, bought for Aiken's Striped Winter, (but labeled Aiken's Green Winter,) have killed to near the ground and are sprouting from the stump. Quite a number obtained Beecher's Sweet from same source, but they seem to be Beecher's, or some one else's, sour, but are a desirable apple.

Grapes.

Grapes were a short crop—not quite a third with me, and from that to one-half, so far as I have learned. The Concord must be grown on a light, warm soil, to be sure of ripening, as you can hardly count on two out of three crops on timber, or good black prairie soil. The Delaware is of course more certain, but not sure of ripening by any means. The Janesville is sure and is a very good grape, growing better the longer it hangs on the vine, and a freeze which spoils the Concord does not seem to hurt the flavor of it a particle. The dark grape which grows wild in some of the New England States, seems to do well here without any protection, and is, in my opinion, a better grape than the Clinton.

I am expected to give a list of fruits best adapted to this district, but beg to be excused therefrom, and will in its place give the qualities of the ideal tree, bush and vine, which are required to make a success in fruit growing in this district.

It must be proof against cold, heat, moisture and drouth; against blight and damage from insects; against careless setting; against damage from horses, cattle, sheep and swine, wagon wheels and farm implements gener-

ally; should be able to stand total neglect, and should bear a large crop of the best fruit the same season it is set out, which will ripen gradually until cold weather, and keep until it is ripe the next summer.

This seems to be the popular idea, and about what is expected in trees, &c., bought of our nurserymen. As it is difficult to fill the bill with any one variety now in existence, let those who are experimenting for new varieties bear the above standard in mind.

Hurriedly yours,

T. G. CARTER.

DISCUSSION.

Tar.

Mr. Grimes. I consider that as an able and truthful report. Tar may be good to keep out the wet and to protect from decay, but I should be afraid to apply it to green parts of plants. Paint will do just as well for those purposes. The German Prune is no hardier than some of the cultivated plums. The Miner while young kills back, but later it becomes hardy. The fruit keeps excellently, and on the whole it is a very good variety.

Mr. Pearce. I would like to know if tar is injurious. I have used pine tar, and no harm was done.

Mr. Grimes. I do not know that tar would do any harm, but some substances will injure. Lard is an illustration. It fills the pores and prevents transpiration.

Mr. Dart. I knew a man to kill 30 or 40 trees by binding with pork rinds.

Mr. Jewell. I have tried pine tar on 75 trees. I saturated cloth, wrapped it around them, and left it on for a month without injury. Anything, however, which closes the pores will prove injurious. I have tried the cultivated Plum, German Prune and the Miner. Some years ago I planted and sold especially of the German Prune. I know of none of them that are alive now. None survived the winter of 1872-73. I have the Miner. It was tender while young, became hardier when older, but bore none until lately. Last year I had about 100 on twelve to fifteen trees. I got some more trees later, however, which fruited younger.

Trunk Injury.

Mr. Pearce. It is a common complaint that a tree is injured on the south side. Frequently this extends only through the outer bark and does not injure the inner bark at all.

Mr. Jewell. Mr. Pearce's statement is correct. Often the blackening which we see does no harm. There may, however, be disease there.

REPORT OF MR. HARRIS ON INSECTS, &C.

The reports of J. S. Harris, Esq., La Crescent, on Insects Infesting House Plants and on General Fruit were read and ordered on file for publication.

They were as follows:

Mr. President and Gentlemen of State Horticultural Society:

The study of the habits and instincts of a few small and insignificant insects or "bugs," as they are most usually termed, appears to many people to be a matter of so trifling importance as to be unworthy the attention of any man of common sense; and yet a thorough knowledge of the science of entomology or bugs, is of vast importance to those who till the soil for a living. There is no useful fruit, grain, plant, or vegetable that has not its insect enemies, and in this State alone the annual damage done by them to the growing crops will doubtless exceed a million dollars, and they are constantly on the increase. Their name might appropriately be called "Legion," and with the exception of one single species—the Colorado potato beetle—who can tell us how to head them off? Doubtless if all of our insect enemies were as well known as the above named beetle, and had been subjected to such irrepressible conflict, much of this immense damage could be prevented.

I am but a young student in the science, and in this paper will risk my reputation only on a few insects that are injurious to flower and ornamental plants that are kept in green houses, conservatories and parlors, taking only those which are most common and giving the remedies that, in my own experience, have proved the best.

Aphis rosea, (of the natural order of Hemiptera,)

Or what is usually known as green fly, or green plant lice, infest nearly all plants that are cultivated both in and out of doors, and if left unmolested are particularly destructive to free-growing plants like monthly roses, scented geraniums, calceolarias, verbenas, &c., when kept in the house. The young lice, extremely minute and of a greenish color, when full-grown they are about one-tenth of an inch in length, and usually of a dark green color; but the color varies somewhat, according to the plants they are feeding upon. The older insects frequently have wings. On the plants kept in the house the female produces her young alive, but some naturalists state that on trees and plants growing out of doors the females, late in the fall, produce eggs for the generation of next spring. This is doubtless so, for a very little freezing kills the mature insect. They attack the young grow-

ing shoots near their points, and the young leaves on the under side, and piercing the tender cells with their proboscis suck away the juices that are needed to sustain the vigor, which causes the foliage to curl up and turn prematurely yellow. They also have a peculiarity of exuding from the abdomen a honey-dew like substance that is a favorite food of small ants, and this substance soon gives the affected plant a filthy appearance. Where ants are seen frequenting plants it is pretty good evidence of the presence of the aphids.

Remedies—In all plant structures, separate from the dwelling, fumigating with tobacco smoke is the best and most practical remedy. This should be done as often as once a week. One plan for doing it is to take a few ignited coals on a shovel and place upon them tobacco stems (the waste of the cigar factory) slightly moistened, about four ounces for each twelve feet square of space in the house, keeping the house closed for an hour or so. Another and better method where brick or earthen floors are used, is to light a few shavings and lay the moistened tobacco stems upon them and let them consume slowly. After the smoke is out of the house the plants should be syringed freely to bring down the stupefied insects, and afterwards the shelves should be brushed off and the floors swept clean. Where the plants are kept in the dwelling house this system of fumigation is not advisable as the room would carry a disagreeable odor for several days. Where but few plants are kept they may be taken out of doors or into the wood-shed, or taking a mild day for it and put into a dry-goods box with a close-fitting cover, and the smoke be blown upon them from a common smoking pipe; afterward syringe them and return them to their places.

Another excellent method for cleaning plants of this insect is to fill a tub with soft water warmed to 100 to 120 degrees: invert the plant, holding the hand over the soil or tying a piece of cloth or something of the kind over the soil in the pot, put all the branches in the water, keeping the pot in the hand, and after drawing it to and fro a few times, take it out and shake it. If any insect remain take a small fine brush and brush them off, giving another dip, which will clean them for the present. This operation should be repeated as often as the insects appear, for nothing has been found out or heard of that will totally exterminate them. After this operation is performed, care should be taken not to raise a dust before the foliage dries off.

Red Spider, (Acarus cellurius.)

This insect is extremely minute, and when on the leaf can scarcely be discovered with the naked eye. When viewed through a microscope the body is a bright red color, and the legs, which are eight in number, are of a light red, and they may be seen running about on the under side of the leaves with great rapidity. Although so small it is more difficult to exterminate than the Aphids.

With its proboscis it wounds the fine capillary vessels of the under side of

the leaves, which causes them to prematurely decay. When very numerous they work a thick web on the under side of the leaf and frequently all over it, causing the plant to present an unsightly and half-dead appearance. The bridal rose, the monthly rose, fuchsias, jassamines, violets, and callas are among the plants that suffer most quickly from their ravages, but when they once get a lodgement scarcely anything will remain exempt from their attacks. An experienced gardener will usually detect their presence before much damage is done. When the foliage of the plants begins to get brown and look sickly it requires but little sagacity to divine the cause.

Remedy.—The delight of this insect is a warm, dry atmosphere, and the only safe and effectual remedy is water. Water persistently applied to the under sides of the leaves by syringing or sponging or dipping as recommended for Aphids, will eventually subdue or destroy them. Fumes of sulphur is instant death to them, but amateurs and the inexperienced had better not try it, as it is a dangerous remedy that must be used with caution, or it will be death to the plants.

Woolly Aphs or Mealy Bug (Coccus hesperidus),

is found infesting many collections of plants, and if not instantly destroyed soon becomes a serious enemy. It is of a white, dusty color, usually covered with down, and resembles little bunches of cotton sticking in the forks of the branches and axils of the leaves. When broken it is of a brownish red. It is generally of a dormant nature, but in warm weather it may be seen moving up and down the stems of plants. If a single plant infested with it is placed in a collection of clean plants, the whole collection will in a few weeks be covered with them. I am having my first experience with them, they having got into my collection on some gardenias purchased in the east, (New York,) and I find them upon whatever comes in their way, but indulge most freely on the Crassulas, Echiveras, Prickly Cactus, Bouvardias and Oleanders, greatly marring their beauty, and I think if left alone would kill them outright.

Remedy.—I find it is quickly destroyed by dipping the plant in a solution of one pound whale oil soap to five gallons of rain water; but as this sometimes injures tender plants I hardly like to recommend it. I think it best, when they are discovered, to watch for them and brush them off with a small tooth or nail brush, or crush them with a pointed soft wood stick. It is also said that alcohol applied to them with a fine brush or feather is instant death to them, but not having tried this remedy, I should not like to recommend it only for very hardy plants.

Brown and White Scale (Coccus.)

This item I write under protest, as it is some time since I have had an opportunity to make microscopic examinations, and I am inclined to think that both brown and white are one species.

These are less injurious to plants and less common than those previously mentioned. They are generally found in the form of a scale adhering to the stems and leaves of plants that have been kept in dark and badly ventilated green-houses and rooms, and where plants are crowded close together. They seem to flourish in the myrtle, ivy and oleander. The full grown scale is about one-tenth of an inch in length and of an oval or egg shape. This scale is not the insect proper, but a substance that forms or grows over the female to provide a protection for the eggs or young. If the full-grown scale is carefully lifted and placed under a microscope, a great number of eggs or active young, will be discerned, of a brownish or yellow color, having six legs, which they use with considerable dexterity, and after they escape from the maternal shelter they ramble around until they find a suitable place for feeding, when they fix themselves to the leaf or branch for life. Over the little insect a light colored film soon forms, and continues to increase in density and size until the insect attains its growth and produces its young, which in turn undergo similar changes, and are transformed into other scales. The effects are of a corroding nature. They extract the juices, and in time the foliage will assume a yellowish and decaying appearance, and the growth of the plant will cease. The best remedy is rubbing off with a stiff brush, or washing frequently with strong soap-suds, using a piece of sponge tied on a small stick, scrubbing every leaf and crevice.

Thrips.

The thrip is an active, jumping insect of very minute size, of various colors, from yellow to dark brown. They generally lurk close to the veins of the leaves of plants and luxuriate in shaded situations, and are very destructive when they get a foothold. The remedy is fumigating with tobacco, or the warm water bath recommended for the Aphids.

JOHN S. HARRIS.

REPORT OF GENERAL FRUIT COMMITTEE FOR DISTRICT NO 1.

LA CRESCENT, MINN., Jan. 16th, 1877.

The fruit crop of this district last year (1876) exceeded in quantity that of any previous year. Strawberries, raspberries and currants were a medium crop, but not as fine quality as in some previous seasons. Grapes were a light crop, owing to a failure to set well in the spring, but ripened well and were of good quality. The apple crop exceeded our most sanguine expectations, and were it not for the extreme hard times, it would give a new impulse to the planting of trees. The Duchess, Fameuse, St. Lawrence, Price's Sweet, Plumb's Cider, Haas, Sops of Wine, Utter's Red and Astrachans are among those doing the very best. The Walbridge still promises well, and fruited for the first time. Some varieties that flourished before the hard winter of 1872-3 are now extinct in this region. The blight prevailed pretty freely, and the crabs and some of the crab men are feeling a

little sick. We hope soon to be able to get along without them as our main dependence, and shall have no use for them when apples are cheap and plenty, for temperance is getting popular here and cider will not pay. Taken all together the prospects are favorable.

JOHN S. HARRIS,
General Fruit Committee, 1st District.

DISCUSSION.

Smoking.

Mr. Elliot. Smoking a house should be done in cloudy weather, or at close of day, when the sun is not bright, and then the bad odor gets out before the next day.

Mr. Jewell. Tobacco works like a charm. I have used it for the woolly aphids on trees extensively.

Borers.

Mr. Kenney. I would like to hear about the Apple Tree Borer.

Mr. Elliot. In the mature condition it is a short-lived insect.

Mr. Dart. Wash the trunks of the trees in the fore part of the season with lye or soap-suds. This keeps off beetles, and keeps the bark smooth, so that they can be seen if they make an attack.

Mr. Pearce. They affect neglected trees. Take ashes, fill a pail quarter full, fill with water and scrub and wash the trunks with this, using a broom. Do not let the grass and weeds grow. I think that chickens keep trees free from borers. An Eastern writer recommends using a wash of aloes and water after the soap-suds.

Mr. Jewell. I do not keep my orchard free from grass, and I never lost but one tree from borers. Another method is to make with tin a funnel around the trunk and fill this with strong soap-suds. This method drowns out the grubs in the trunk.

Mr. Dart. I believe that the lye wash is good for the tree in other ways besides destroying or preventing the borer.

Mr. Brand. I have had some experience with borers. Much hickory appears to harbor them, and where there is no hickory they are rare. The borer full grown is a beetle, and it makes an incision from $\frac{1}{2}$ to $1\frac{1}{2}$ inches in length in which it lays a number of eggs. By drawing a knife blade over these incisions you can hear the eggs crack. They hatch in about ten days and begin to work, which you can see by the sap exuding. I believe they stay

in the trunk two winters. They may be dug out with a knife, punched in the hole with wire, or the hole filled with cotton saturated with kerosene.

Mr. Kenney. I see now why some places are free from borers. They took all my time before I wrapped the trunks of my trees.

AMENDMENTS.

The report of the Committee on Amendments was read and accepted and the committee continued.

The report was as follows:

Your Committee on Amendments to the Constitution and By-Laws report that it is not prepared at present to report on life memberships with a view to raising revenues.

Your committee also report an amendment to the By-Laws which shall read as follows:

FINAL ARTICLE. These By-Laws may be amended by a two-thirds vote of the Society at any regular annual meeting.

VARIOUS RESOLUTIONS.

Fruit for State Exhibition.

A motion was made to instruct the committee appointed to collect fruits for the meeting of the Pomological Society, to collect fruits at the same time for the Exhibition of this Society next fall.

The motion was carried.

Delegates to Pomological Society.

A motion was made that the President and Secretary be authorized to issue delegate credentials to all members who will attend the meeting of the Pomological Society free of expense to this Society.

The motion was carried.

Transactions for County Societies.

A motion was made that the Secretary be instructed to issue wanting copies of the Transactions to all County Horticultural Societies.

The motion was carried.

Ornithology.

A committee on Ornithology was proposed, but it was finally decided that a paper on that subject should be provided without such a committee.

Good words were spoken for several birds, and some bad words for others.

Final Resolutions.

The report of the committee on final resolutions was called for and read. The report was accepted and adopted, passing the resolutions, which were as follows :

Mr. President :

The committee on final resolutions beg leave to report.—

First Resolved, That the members of this Society from abroad hereby tender their sincere thanks to the Committee on Arrangements, for the provision they have made for our satisfaction and comfort.

Second Resolved, That we extend to this city our best wishes for its prosperity and welfare, and especially to those families who have so kindly entertained us during our stay among them.

Third Resolved. That we instruct our Secretary to furnish those families each with a copy of the current year's reports when published, as a memento of our thanks. The members furnishing the Secretary with the names of those entitled to receive them.

Fourth Resolved, That our sincere thanks be and are hereby extended to the Chicago, Milwaukee & St. Paul, and the Winona & St. Peter Railroad Companies for their generous actions in passing us over their roads at reduced rates, and we assure them that we do not come here in our own behalf but in the Horticultural interests of this great State, and our hearts are in the work, and in performing that work we trust that all will be mutually benefited and we hereby assure all with whom we have had intercourse, that they will be remembered long after we have dispersed and retired to our several homes.

WIVES OF MEMBERS.

A resolution was offered amending the By-Laws so as to make the wives of members, members of the Society without fee.

At 10 o'clock P. M. the Society adjourned.

APPENDIX.

APPENDIX A.

REPORT OF THE DELEGATES TO THE MEETING OF THE AMERICAN POMOLOGICAL SOCIETY, AT THE CENTENNIAL EXPOSITION, PHILADELPHIA, SEPT. 11TH TO THE 16TH, 1876.

PART I.—PREPARED BY J. T. GRIMES.

In presenting this report, it may be proper to state that the meeting of the American Pomological Society for the centennial year was not the regular biennial session, but an ad interim meeting having its bearing on the great central idea of the exposition, in showing the people how pomology has progressed in America during the last century. No such an exhibit of fruits was ever made on this earth; in fact, it was the grand feature of the month, and Americans had more reason than ever to be proud of their country when looking over those tables loaded with more than 15,000 plates of fruit, the fairest and best ever produced beneath the sun.

The weather was all that could be desired, and there seemed to be only one regret, that Pres. Wilder was unwell and could not be present; consequently, no formal meeting of the Society was held as had been proposed.

It was the original plan to place this group in the Horticultural Department, where it would naturally belong, but there was no room there; so the management projected an annex to the Agricultural Hall, constructed of wood and glass. The tables were arranged in long rows with the ends fronting the entrance doors, and were made narrow with three shelves to each side so as to facilitate the examination of the fruits by the judges and visitors.

When we arrived on the grounds we felt somewhat embarrassed as our society had accepted an invitation to exhibit with the Pennsylvania State Horticultural Society, as we supposed at the Centennial, but when we learned that they were only intending to exhibit at their own hall in the city of Philadelphia, we thought best to make other arrangements, and accordingly applied for space at the centennial department, but were informed that it was all pre-engaged, but our fruit, when it arrived, could be placed upon

tables that were not occupied. We asked if that arrangement would be permanent. They said not, but we would have to move if those entitled to the space came forward and claimed it. We told them that we could not place ourselves in such positions as to be obliged to move round, in fact we thought some injustice had been done. Canada for instance had one row of tables the whole length of the building, Iowa had nearly as much, and some other States and societies had a very liberal proportion, while others had none. But we found that Canada did fill her tables with fruits, fine, fat and luscious, Iowa did as well, and Kansas! well what is it that Kansas can't do in advertising her resources? We also noticed that most of those States that had not secured space also failed to be there with their fruits.

But Minnesota was not left out in the cold; we were subsequently notified that if we would make formal application, two tables and 400 plates would be placed at our disposal, which was at once done and the space secured, and would have been filled to overflowing, had the Express Companies brought forward all the fruits which had been sent and on which the charges had been prepaid. As it was, our collection only numbered 209 plates containing 108 varieties of standard apples, 35 of crabs, 1 of pears and 2 of plums. Of standard apples we had on exhibition 63 named varieties, unknown 12, seedlings 19, of these E. B. Jordon, of Rochester, contributed 9, and 14 varieties of Russian apples, designated by numbers, were contributed by Moulton & Co., Minneapolis, and attracted a great deal of attention, as did all of our fruits from their firm, polished, waxy appearance. A full list of contributors will be found in Part II to this report.

The fruits were arranged for examination by the judges as follows:

Division 1.—a. Summer Apples.
b. Autumn Apples.
c. Winter Apples.

Division 2.—a. Summer Pears.
b. Autumn Pears.
c. Winter Pears.

Division 3.—a. Free Stone Peaches.
b. Cling Stone Peaches.
c. Apricots.
d. Nectarines.
e. Native Plums.
f. Foreign Plums.

Division 4.—a. Native Grapes.
b. Foreign Grapes.

Division 5.—a. Strawberries.
b. Raspberries.
c. Blackberries.
d. Currants.
e. Gooseberries.
f. Cranberries.
g. Water Melons.
h. Citron Melons.

Division 6.—a. Oranges.

Division 7.—a. Almonds.
b. Filberts.
c. Walnuts.
d. Shellbarks.

The displays by nurserymen, fruit-growers and societies were considered separately, and the awards consist of a special report by the judges and a Diploma, and a Bronze Medal from the United States Centennial Commission. The list of awards will be found in Part III. Exhibitors were required to attach cards to their fruits inserting the name of each variety, if known, or if

a seedling, or if unknown, to mark it as such ; so that the judges could also act as a committee on nomenclature, to insert, correct, or reduce all local and improper names to a common standard. This is an important work, and can only be done by a national society, such as the American Pomological.

Another work of perhaps equal importance rests also with that society which has as yet not been attempted. It is the mapping out of a fruit chart of our country, showing by isothermal lines to what limits the various kinds of fruits can be successfully grown, for instance apples, peaches, pears and plums that are grown near St. Catharines, Canada, cannot be grown as far north as central Iowa, and peaches that are produced in abundance near the eastern shore of Lake Michigan cannot be grown with any degree of certainty for more than a hundred miles south; away from the influence of large bodies of water, and in going south, certain fruits disappear while others take their place. The value of such a chart can be seen at a glance. It would not only serve as a guide to the fruit grower, but the country could be divided into fruit zones corresponding to the areas occupied by the different fruits, and the fruits of each district placed side by side at our national exhibitions to be judged in competition only within the district to which it belonged.

In making up this report your delegates expected to avail themselves of the special report of the judges (which is part of the awards to which we are entitled) and which the Director-General assured us would be printed in pamphlet form and a copy furnished, but which we have not, as yet, been able to obtain.

The only document which we have received is the following notice of award :

INTERNATIONAL EXHIBITION. (No. 235.)

PHILADELPHIA, 1876.

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith.

PHILADELPHIA, February 14th, 1877.

REPORT ON AWARDS.

Product : One hundred and nineteen varieties of apples. Name and address of Exhibitor : Minnesota State Horticultural Society, Minnesota.

The undersigned, having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for award, for the following reasons, viz. : For a large and valuable collection representing the pomology of the extreme North, including twenty-four

varieties of crabs (pyrus Baccata.) The whole illustrating the capacity of varieties of fruits to adapt themselves to peculiarities of climate.

SUEL FOSTER.

Signature of the Judge.

Approval of Group Judges.

T. T. LYON.
W. L. SCHAFFER.
A. W. HARRISON.

E. SATTERTHWAIT.
JOSIAH HOOVES.
WILLIAM PARRY.

THOMAS MEEHAN.
J. B. YELLOWLY.
PARKER EARLE.

A true copy of the record.

FRANCIS A. WALKER,

Chief of the Bureau of Awards.

Given by authority of the United States Centennial Commission.

[L. S.]

A. T. GOSHORN,
Director-General.

J. L. CAMPBELL,
Secretary.

J. R. HAWLEY,
President.

PART II.—VARIETIES, CONTRIBUTORS, &c. PREPARED BY
WYMAN ELLIOT.

MINNESOTA FRUIT.

PREPARING FOR A DISPLAY AT THE CENTENNIAL EXHIBITION.—TO THE FRUIT
GROWERS OF MINNESOTA.

The State Horticultural Society of Minnesota, at the summer meeting, held at the State University, June 28th, 1876, decided to make a display of fruits at the Centennial Exhibition, at the time of the meeting of the American Pomological Society, September 11th to 16th, and appointed the undersigned to take charge of it.

In order to make the exhibition a success on the part of the State, we would respectfully solicit every fruit grower to contribute such specimens as he may have, to the care of Prof. C. Y. Lacy, Secretary State Horticultural Society, Minneapolis, Minnesota, who will forward the same, or send direct to Philadelphia, consigned to our care. Every specimen should be wrapped in tissue paper and packed in cotton or some soft material to prevent bruising. The boxes should also be open enough to prevent heating. Each variety should be carefully labeled, and the contributor's name attached thereto, as we intend to keep a complete record, to be appended to the report which we shall make to the annual meeting of our society. Such fruits as mature before the time, can be preserved in alcohol and water, and sent.

As a distinct feature, we would earnestly recommend that originators of new varieties of fruits to send all specimens worthy of consideration, giving in writing all facts relating thereto. These, in justice to the originators, will be exhibited separate from the general collection, that the attention of the Pomologist may be directed to their merits. We shall be on the grounds at least one week before the time specified, in order to perfect all necessary arrangements.

CHAS. Y. LACY, Sec. State Hor. Soc.
J. T. GRIMES, Del. of State Hor. Soc.

In response to nearly one hundred of the above circulars sent, there were received from the following contributors, fruits to be forwarded and placed on exhibition at the Centennial.

The undersigned served in place of Prof. C. Y. Lacy, at his request, as he was sick and unable to receive and forward fruits.

W. E. BRIMHALL, ST. PAUL.

Duchess of Oldenburg.	Haas.
Molly.	Wealthy.

Crabs.

Chicago.	Gen. Grant.
Hyslop.	Large Yellow.
Large Red.	Marengo Winter.
Montreal Wax.	Montreal Beauty.
Soulard.	Transcendent.
Virginia.	

TRUMAN M. SMITH, ST. PAUL.

Transcendent.

MRS. WM. PAIST, ST. PAUL.

Transcendent.

CHARLES HAUSE, ST. PAUL.

Duchess of Oldenburg.	Plumb's Cider.
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THOMAS ODELL, ST. PAUL.

Duchess of Oldenburg.	Haas.
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F. G. GOULD, EXCELSIOR.

Wealthy.

JACOB MARTELLA, WEST ST. PAUL.

Haas.	Fameuse.
Gravenstein.	

Russian Varieties.

Sweet Pear.	Unknown.
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Crabs.

Gen. Grant.

WYMAN ELLIOT, MINNEAPOLIS.

Pride of Minneapolis.	Hyslop.
Transcendent.	

Plums.

Harrison's Big Red.

Harrison's Peach.

J. T. GRIMES, MINNEAPOLIS.

Duchess of Oldenburg.
Haas.Grand Sultan.
Tetofsky.*Crabs.*

Transcendent.

Hyslop.

GEO. HACKETT, MONEY CREEK.

Duchess of Oldenburg.
Golden Russet.
Lucy.
Money Creek Beauty.
Quaker Beauty.
3 varieties Seedlings.Fall Stripe.
Early Washington.
Talman Sweet.
Sweet Winter Crab.
Plum Crab.

A. W. SIAS, ROCHESTER.

Ben Davis.
Duchess of Oldenburg.
Golden Russet.
Haas.
Melinda.
Koreana.
Talman Sweet.
2 Seedlings.Cook's Favorite.
Fameuse.
Goodenough.
Koursk's Anisette (New Russ'n.)
Red Astrachan.
Sops of Wine.
Vasilis Largest. (New Russ'n.)*Crabs.*Conical.
Hyslop.
Meader's Winter.
Montreal Beauty.
Power's Large Red.
Soulard.Beecher's Sweet.
Hesper Rose.
Maiden's Blush.
Orange.
Transcendent.*Pears.*

Flemish Beauty.

G. W. CLARK, WINONA.

American Russet.
Fall Orange.
Haas.
Keswick Codling.
Painted Lady.
Perry Russet.
Rome Beauty.
Utter's Red.Fameuse.
Golden Russet.
Jeniton.
Northern Spy.
Paradise Winter.
Price's Sweet.
Romanite.
Winona Chief.

JAMES HARDWICK, WINONA.

Fameuse.	Haas.
Golden Russet.	Nonparell.
Price's Sweet.	Talman Sweet.

WINONA CO. FARM. W. D. HATCH.

Duchess of Oldenburg.	Fameuse.
Golden Russet.	Price's Sweet.
Westfield Seek-no-further.	

WILLARD HARRISON, HOMER.

Duchess of Oldenburg.	Fameuse.
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F. B. ROWELL, HOMER.

Duchess of Oldenburg.	Fameuse.
Fall Orange.	St. Lawrence.
Talman Sweet.	

Crabs.

Transcendent.	Siberians.
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S. E. ELDRIDGE, WINONA.

Cheesbough Russet.	Duchess of Oldenburg.
Fall Pearmain.	Golden Russet.
Jeniton.	Perry Russet.
Phoenix.	Lady Apple.
Price's Sweet.	Talman Sweet.
Saxton.	Willow Twig.
Winona Chief.	

Crabs.

Transparent.	Black Winter Crab.
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NORMAN BUCK, WINONA.

Balley Sweet.	Fall Orange.
Fall Pearmain.	Fameuse.
Keswick Codling.	Talman Sweet.
Strawberry.	Silver-Blush Seedling.
1 unknown.	

C. F. BUCK, WINONA.

Ben. Davis.	Fameuse.
Fall Pearmain.	Lady Apple.
Westfield Seek-no-further.	1 unknown.

GEO. E. KING, WINONA.

Twenty-ounce Pippin (11 in.)

JOHN HART, HILLSDALE.

American Summer.	Pearmain.
Duchess of Oldenburg.	Early Joe.
Hawley.	Jefferson County.
Saxton.	Utter's Large Red.
Yellow Bellflower.	Red Astrachan.
6 varieties seedlings.	

Summer Varieties.

Benoni.	Paradise.
Red Astrachan.	Seedling No. 8.

O. M. LORD, ROLLINGSTONE.

Fameuse.	2 unknown.
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MRS. MARY CAMPBELL, ROLLINGSTONE.

Baldwin.	Blushing Lady.
Duchess of Oldenburg.	Fameuse.
Utter's Large Red.	
4 varieties seedlings—No. 8 named Dumelon.	

JAMES MITCHELL, HILLSDALE.

Perry Russet.	4 unknown varieties.
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F. A. JEWELL, LAKE CITY.

Duchess of Oldenburg.	Fall Stripe.
Green Winter.	Haas.
Peach.	

Orabs.

Alken's Green Winter.	Beecher's Sweet.
Badger State.	Conical.
Early Strawberry.	Gen. Grant.
Hesper Rose.	Maiden's Blush.
Orion.	Orange.
Quaker Beauty.	

I. H. MOULTON, EAST MINNEAPOLIS.

Cordell.	Fameuse.
Haas.	Red Astrachan.
Saxton.	Walbridge.
Wealthy.	

Russian Apples.

Transparent Muscovite.

Nos. 530, 543, 985, 987, 377, 587, 463, 988, 274, 393 and 190, in catalogue of apple trees imported in 1870, from St. Petersburg, Russia, by the U. S. Department of Agriculture.

Crabs.

Aiken's Green Winter.	Aiken's Striped Winter.
Beecher's Sweet.	Badger State.
Gen. Grant.	Orange.
Quaker Beauty.	Sweet Russet.
White Winter.	

J. O. BEACH, HOMER.

6 specimens of large apples for name.

Named Cranberry Pippin (by Plumb.)

E. B. JORDON, ROCHESTER, MINN.

Ben Davis.	Carolina Red June.
Duchess of Oldenburg.	Jenlton.
Haas.	Melinda.
Price's Sweet.	Peach.
Seek-no-further.	Saxton.

Crabs.

Aiken's Green Winter.	Beecher's Red.
Beecher's Sweet.	Conical.
Early Strawberry.	Fellows' Winter.
Gen. Grant.	Hesper Blush.
Hyslop.	Malden's Blush.
Minnesota.	Malakoff.
Meador's Red Winter.	Meador's Green Winter.
Orange.	Sweet Russet.
Transcendent.	

Seedlings.

Haas No. 1, large. Haas No. 2, Haas No. 3, small.

JOHN S. HARRIS, LA CRESCENT, MINN.

Autumn Strawberry.	Ben Davis.
Bailey Sweet.	Cranberry.
Duchess of Oldenburg.	Domine.
Early Harvest.	Fameuse.
Golden Russet.	Hubbardston's None-such.
Julia.	Jonathan.
Northern Spy.	Pomme de Gris.
Perry Russet.	Price's Sweet.
Plumb's Cider.	Red Astrachan.
Roxbury Russet.	Sops of Wine.
St. Lawrence.	Saxton.
Seek-no-further.	Talman Sweet.
Tetofsky.	White Astrachan.
White Pippin.	Walbridge.
Vandever.	Sylvan Sweet Crab.

[If the names of any contributors have been omitted, the Secretary would like to publish them in a future report.]

LIST OF FRUITS STARRED FOR MINNESOTA IN THE BIENNIAL REPORT OF THE
AMERICAN POMOLOGICAL SOCIETY.

Ben. Davis.*
Duchess of Oldenburg.*
Edgar's Red Streak or Walbridge.*
English Russet or Poughkeepsie Russet.*
Fall Pippin.*
Fall Queen or Haas; Gros Pommier.**
Fameuse or Pomme de Neige; Snow Apple.*
Gilpin or Curthouse; Little Romanite.*
Golden Russet, of Western New York.*
Gravenstein; ripens early and keeps late.*
Hawthornden.*
Late Strawberry or Autumn Strawberry.*
Malden's Blush.*
Plumb's Cider.*
Rambo.*
Red Astrachan.*
St. Lawrence.*
Sops of Wine or Hominy.*
Tetofsky.*
Talman Sweet.*
Wealthy.*
Willow Twig or James River.*

Twenty-two varieties are contained in this list. One variety, the Wealthy, is put down for trial, and one variety, the Haas, is double starred, and this over the Duchess, one of the most hardy, productive and best varieties in the State. It has occurred to us that this list is a little defective and needs some revision. Let us take a glance at the varieties on exhibition at the Centennial, and also at our State Fair, and see if they entirely correspond with the above list. The Hawthornden and Malden's Blush are neither in the list of apples on exhibition at our State Fair or at the Centennial. No doubt there are some in the list of nearly three hundred varieties of the Pomological Society, besides those starred, that may be adapted to some particular sections of our State. In the list of standard apples sent for exhibition at the Centennial, we find there were of the Duchess of Oldenburg twelve contributors; Fameuse, eleven; Haas, eight; Golden Russet, six; Saxton, six; Wealthy, Russian varieties, Red Astrachan, Fall Orange, Perry Russet, Utter's Red, Price's Sweet, Fall Pearmain, three; Ben. Davis, Keswick Codling, Lady Apple, two. In the remainder of the list no two contributors exhibited the same variety.

In that of those sent for the State Fair, there were of Duchess of Oldenburg, ten contributors; Fameuse, eight; Haas, nine; American Golden Russet, Ben Davis, Pomme de Gris, Saxton, Tetofsky, Wealthy, Utter's Red, four; (Remark, Utter's Red twice by the same exhibitor, as Utter's Red and Lucy.) Dominie, Perry Russet, Rawle's Janet, Seek-no-further, Talman Sweet, Alexander, Plumb's Cider, St. Lawrence, three; Bethlehemite, Little Romanite, Northern Spy, Walbridge, Winter Wine, Bailey Sweet, Price's Sweet, Sweet Pear, Fall Orange, Vale's Winter Pippin, Pioneere, Molly, two. In the remainder, no two exhibited the same variety. The above lists show that our Society have

been wise in keeping their list for general cultivation within bounds, rather than having too many varieties to select from.

We generally get our best and greatest number of varieties from those persons most favorably located for fruit raising. If our State could be districted according to limitation of success with certain varieties, it would be of much advantage to those just embarking in fruit culture. For example—a certain portion of the river counties raise fruits that are wholly unadapted to the interior of the State. There are isolated sections in nearly every portion of the State where, from the nature of the soil, elevation or proximity to considerable bodies of water, fruit can be more successfully raised than in the surrounding country. Yet, to publish a suitable list for these locations, would be doing great injustice to those in favored situations, while to limit it to only those varieties which are hardy and successful in all portions of the State would do the more favored equal wrong. I would suggest that the list of fruits cultivated in this State for starrng at the next biennial session of the American Pomological Society, be placed in the hands of a proper committee.

WYMAN ELLIOT.

PART III.—AWARDS AT THE CENTENNIAL ; POMOLOGICAL DEPARTMENT.

The recommendation for awards by the Pomological group of Jurors were adopted by the Centennial Commission without a single exception, as follows, viz. :

CANADA.

Fruit Growers' Association, Ontario.

D. W. Beadle, Sec. St. Catharines	Apples and Grapes.
James Dougal, Windsor	Apples.
Wm. Gourney, Hamilton	Salem Grapes.
W. F. Taylor, Hamilton	Clinton Grapes.
Mayor Pafford, Niagara	Exotic Grapes.
Thomas H. Parker, Woodstock	Grapes under glass.
Chas. Arnold, Paris, Ontario	Apples and Seedling Grapes.
Donald Smith, per Fruit Growers' Society	Apples.
Hugh Scott, Jr., London, Ontario	Apples.
Jas. M. Stacy, Masonville	London Pippins.
J. W. Newman, Lachine	Seedling Apples.
J. Morgan, Quebec	Collection of Grapes.

CONNECTICUT.

State of Connecticut	Apples, Pears and Plums.
S. S. West, Columbia	Apples.
T. C. Austin, Middletown	Apples.
T. S. Gould, West Cornwall	Apples and Pears.
P. M. Augur, Middlefield	Apples.

David Williams, East Hartford.....Apples.
 B. H. Atwater, Berlin..... Apples.
 P. D. Stillman, Hartford..... Pears.
 John Turner, Norwich Pears.

DELAWARE.

E. Anderson, Felton..... Pears.

DISTRICT OF COLUMBIA.

John Saul, Washington..... Pears.

FLORIDA.

Redmond & Co., Pensacola Figs.

INDIANA.

Indiana Horticultural Society, Wm. H. Ragan, Secretary,
 Clayton.....Apples and Pears.

IOWA.

Iowa State Horticultural Society. Apples and Pears.
 Z. H. Hollingsworth, Sandusky..... Apples.
 R. S. Willet, Malcolm..... Apples.
 E. H. Elkins, Burlington..... Apples.
 Jas. Smith, Des Moines... .. Apples.
 State of Iowa..... Apples.
 W. W. Gearheart, Burlington..... Apples.
 David Leonard, Burlington..... Apples.
 Henry Avery, Burlington..... Apples.
 T. C. Barney, Keokuk..... Pears.
 John Given, Keokuk..... Pears.
 G. O. Hilton, Keokuk..... Pears.
 G. B. Bracket, Denmark..... Pears.
 W. T. Smith, Des Moines..... Pears.

KANSAS.

Kansas State Board of Centennial Managers, Topeka.... Apples.
 Leavenworth County Horticultural Society..... Apples.
 Dr. J. Stayman, Leavenworth..... Apples.
 D. L. Hoadley, Lawrence..... Apples.

MAINE.

Maine Pomological Society..... Apples.

MASSACHUSETTS.

Massachusetts Horticultural Society..... Apples and Pears.
 Joseph H. Fenno, Revere Apples and Pears.
 Benjamin G. Smith, Cambridge Apples and Pears.
 J. W. Manning, Reading..... Apples.
 Worcester County Horticultural Society Pears.
 Samuel Hartwell, Lincoln..... Apples.
 John Cummings, Woburn..... Apples.
 Worcester County Agricultural Society..... Pears.

Chas. F. Curtis, Jamaica Plain Pears.
 Wm. H. Earle, Worcester Pears.
 Mrs. Geo. A. Chamberlain, Worcester Pears.
 Hon. Marshal P. Wilder, Boston Pears (400 varieties.)
 Hovey & Co., Cambridge Pears (175 varieties.)
 Amos Bates, Hingham Pears.
 Griffin & Dolan, Cambridgeport Pears.
 O. B. Hadwen, Worcester Pears.
 F. & L. Clapp, Dorchester Pears.
 Newel Wood, Millberry Pears.
 E. W. Lincoln, Worcester Pears.
 John C. Newton, Worcester Pears.
 Robert Manning, Salem Pears.

MICHIGAN.

Michigan State Horticultural Society Apples.
 Michigan State Pomological Society Peaches and Prunes.
 N. Helling & Bro., Battle Creek Apples.
 J. W. Humphrey, Plymouth Apples.

MINNESOTA.

Minnesota State Horticultural Society Apples.

NEBRASKA.

Nebraska Horticultural Society Apples and Pears.

NEW JERSEY.

New Jersey State Horticultural Society Apples, Pears, Grapes and Peaches.
 Agricultural Society of Egg Harbor Grapes.
 Thos. J. Beans, Moorestown Peaches.

NEW YORK.

Elwanger & Barry, Rochester Apples, Pears, Grapes and Plums.
 J. B. Seely, Vine Valley Grapes.
 Jas. H. Ricketts, Newburgh Seedling Grapes.

NORTH CAROLINA.

Natt. Atkinson, Asheville Apples.

OHIO.

Ohio Horticultural Society, M. B. Bateman, Secretary, Paynesville .. Apples.
 F. S. Cary, Hamilton Apples.
 Geo. W. Campbell, Delaware Grapes.

OREGON.

H. Lambert, Portland Apples.
 Seth Lewelling, Milwaukee Pears.
 Joseph E. Ledlock, Portland Collection of Prunes.

PENNSYLVANIA.

Berks County Agricultural Society.....	Apples
Mrs. G. W. Carpenter, Germantown.....	Peaches.
Daniel Smeych, Lancaster.....	Peaches, Pears and Apples.
Fred Seltz, Sr., Easton.....	Nectarines.
Alfred Sheller, Lewisburg.....	Apples.
H. M. Engle & Son, Marietta.....	Apples.
Samuel Streeper, Broad Axe.....	Apples.
Sam. W. Noble, Jenkintown.....	Apples.
J. M. Nelson, Indian Run.....	Apples.
P. Kieffer, Philadelphia.....	Pears.
James Wardrop, Pittsburgh.....	Pears.
Washington Brookman, Reading.....	Pears.
E. N. Wright, Germantown Hothouse.....	Grapes.

NOTE.—The State Horticultural Society of Pennsylvania exhibited at Horticultural Hall in the city of Philadelphia.

WISCONSIN.

Wisconsin State Horticultural Society..... Apples.

The acting judges were Mr. Yellowly, of Mississippi, Mr. Lyon, of Michigan, Mr. P. Earle, of Illinois, Messrs. Harrison, Schaffer, Satterthwaite, Hoopes and Meehan, of Pennsylvania, Parry, of New Jersey, and Foster, of Iowa.

PART IV.—STATE EXHIBITIONS.—AMERICAN POMOLOGICAL SOCIETY REUNION. PREPARED BY WYMAN ELLIOT.

While looking over this vast area of fruit, many varieties unknown in this cold climate, or at least adapted only to more southern latitudes, we could but admire the taste exercised in making selections for exhibition, and the care with which they had been packed and labeled. In many instances, each variety of six specimens was enclosed in a manilla paper sack, or, when too large, each specimen was wrapped in soft paper; each variety, or when packed singly each specimen, being plainly labeled, which added much to the ease and rapidity of unpacking and placing on exhibition.

Wisconsin made a fine exhibit; and why should she not, with such men as A. G. Tuttle and J. C. Plumb to collect her fruits and place them on exhibition?

A seedling, the Darkham Russet, a good cooker, bearer, and hardy tree; healthy, good grower, spreading habit; color red russet, size above medium; is spoken of by Mr. Tuttle as one of the best new apples for their section. Also, the Kellog Russet, hardy, upright, stout grower, productive, good keeper; a seedling from Golden Russet. A dark-reddish apple, called Black Vandever, is mentioned as very hardy in that state.

Iowa, in trying to excel Kansas in quantity, if not in varieties and fine specimens, made a grand display. Her crabs were very fine, the largest Hyslop being $6\frac{1}{4}$ inches in circumference. One feature of her fruit exhibit, and a very good one, was samples in wax of their fruit exhibited at Chicago last year.

Illinois was well represented. In conversation with one of her fruit men we were told he had a new process for raising orchards which would succeed on any prairie soil, but he was loth to impart information unless paid for it. Take it for what it is worth, everything in and about this grand show was to make money off the visitors. His remedy for the codling moth was to set sour milk in pans among his trees, placing lights over them, the moths being attracted by the light drop into the milk. The milk is also relished by the moth, each serving the other as a trap to beguile the insect to death. While talking with Z. M. P. King, of Washington, D. C., on the hardiness of trees, he being a man that had taken considerable interest in fruit growing, said that many trees grown south were equally hardy when taken north, and suggested that we procure scions from the mountainous regions of South Carolina and experiment as to hardiness, for, said he, "I know of some varieties that have done admirably when taken north."

California, that boasts of such wonderfully fine fruits, started out to make a fine exhibit; but her efforts, like her fruits, were not lasting. After being shipped such a long distance the fruit soon decayed, and the third day their tables were cleared, leaving only the vacant boards to show conclusively that northern fruits were better keepers and better adapted to such exhibitions.

Grapes were not exhibited in so large quantities as one would expect, but those that were placed on exhibition were magnificent specimens, especially the Delaware, from J. B. Seeley, Vine Valley, N. Y. He had one bunch weighing ten and one-half ounces.

J. H. Ricketts', of Newburg, N. Y., seedling grapes were a wonderful collection of over sixty plates, of all flavors and shades of color. The exclusive right to propagate certain of these he has sold for \$5,000.

Though unaided by our State Legislature we were enabled, by the generosity of a few of our fruit growers, to make a very creditable show. Had the fruits sent by our worthy President and John S. Harris, arrived, we should have been better prepared to cope with other States. As it was, the varieties on exhibition compared favorably with the same varieties from other localities. High freight and the poverty of our Society, deterred us from sending forward the quantity of each variety that some States exhibited. Our Crabs were a wonder to many; a limb two feet long containing fifty apples attracted universal attention.

The want of proper information in regard to directing packages of fruit, was the reason your delegates failed to receive the fruits of Pres. Smith and brother J. S. Harris, two of the most essential collections made up by our members for that occasion.

We applied for instructions to our State Centennial Board, but as they were then in Philadelphia we were unable to procure the information we so much needed.

The American Pomological Society, through its treasurer, sent out cards to the members containing the following: "The grand exhibition of fruits at the Centennial is to take place from Sept. 11th to 16th. Our members will join in a social reunion on the 14th of that month, by invitation of the Penn. Horticultural Society."

When our collection was ready to forward no one knew whether to direct to the State Centennial Board, Centennial board of Commissioners, or Penn. Horticultural Society. We accordingly directed as we thought best to Penn. Horticultural Society.

We, as delegates, express our satisfaction at the promptness of those members who aided in making the collection, and especially commend the zeal of, and assistance rendered by, Norman Buck, Esq., of Winona. The morning we reached Winona was stormy and disagreeable, but Mr. Buck saved us much trouble by having all fruit collected at his office. Mr. Hart drove in from his place through the storm to bring us specimens that just filled a deficient spot. On the whole, the collection from Winona county was a very marked feature in our exhibition.

In accordance with the invitation of the Pennsylvania Horticultural Society to the members and friends of the American Pomological Society to a social reunion, a reception was held September 14th, at Horticultural Hall, Broad street, all the more enjoyable to the large number of guests present on account of its informality. The numerous guests were received by Mr. J. E. Mitchell, Chairman of the Committee of Reception; Mr. W. L. Schaffer, President of the Horticultural Society; Mr. A. W. Harrison, Secretary, and other officers. The Hall was beautifully decorated with flowers, foliage and tropical plants, flags and elegant damask curtains. A large portrait of Hon. Marshall P. Wilder occupied a place in the center of the stage and was a marked feature of attraction. As he was prevented by illness from being present, the likeness, to those who were wont to behold him on like occasions, full of wit and humor, made up in part for his absence. He has been President of the American Pomological Society since its organization twenty-seven years ago.

He sent to the Pennsylvania Society his sincere regret that he could not be present on such a happy occasion, with the following sentiment:

"The Pennsylvania Horticultural Society, a great leader in the cause of American horticulture. Renowned and prosperous in the past, may it be remembered, honored and revered as a benefactor to our country and the world."

To this, President Shaffer gave this response:

"The American Pomological Society, may it continue to flourish and produce good fruits in the long future, as it has in the past quarter of a century under the skillful and genial culture of its distinguished chief, Marshall P. Wilder, and his able assistants."

Among the members of the Pomological Society present were,

Dr. J. A. Warder, of Ohio, and P. Barry, of Rochester, N. Y., Vice Presidents; Thomas P. James, Treasurer; Judge Sley, Charles M. Hovey and Robert Manning, of Boston; Wm. Parry, of N. J.; P. Berckmans and Charles Downing. Other distinguished guests present were Count Dassie, of Italy; Profs. Garde, from Norway, and Elias, from Egypt; Rusten Effendi, Turkish Commissioner; several Canadian Commissioners; Gov. Anthony, of Kansas; Prof. Thurber, of New York, and Messrs. Saunders, of Washington, Parsons of Flushing, Breckenridge of Kentucky, and G. E. Morrow, Secretary of the American Agricultural Congress. In addition to these, there were present members of the ladies' committee and several officers of the United States Centennial Commission and Board of Finance.

We present the Pennsylvania Horticultural Society's programme and Centennial desert table for the year 1876, to be preserved by our Society.

We have here sketched a few of the many things we saw, felt, smelled, tasted, and heard, for it required all the senses to take in this vast panorama of productions and inventions, the handiwork of woman as well as man. We have not attempted to describe all that we saw and heard, but spoken only of that which we considered interesting and instructive to our Society and the fruit growers of our State.

WYMAN ELLIOT.

PART V.—EXHIBITION OF PENNSYLVANIA HORTICULTURAL SOCIETY.

We cannot conclude this report without referring to the meeting of the old Pennsylvania Horticultural Society, an institution which has grown very strong in the popular affection. The annual meeting took place Sept. 12 to 14, according to announcement, and through the courtesy of Mr. Harrison, their secretary, your delegates were presented with a free ticket to the exhibition and also to the reception given on the evening of the 14th.

Occurring at the same time of the meeting of the American Pomological Society at the Centennial, it proved a much greater success than could have been anticipated. Fruits were particularly beautiful and abundant, and judging from what we saw Pennsylvania must stand in the front rank as a fruit-growing State.

President Wilder, of Boston, had a fine collection of pears, as also did Hovey & Co., of Cambridge, Mass., besides some others. The Fruit-Growers' Society of Potomac, contributed some choice specimens of fruits, and the finest peaches we saw were from Mt. Vernon, Va.

The collection of plants was unusually fine and well grown, and embraced a large number of beautiful novelties. The designs and

ornaments of cut flowers would pass a critic's eye, showing that the City of Brotherly Love was fully up to the standard. The word "beautiful" seemed to pass every lip, but we thought it a tame expression of what we saw.' Among the designs we noticed a ship made of cut flowers, which seemed to be plowing the waves across the ocean's broad expanse. Its sails were made of the white flowers of the Pampas grass, and stood unfurled before the breeze.

The basement of the building was fitted up for the exhibition of vegetables, of which there was a fine display, but nothing better than we frequently see in our own State.

At the reception given by the Horticultural Society to their pomological brethren, President Schaffer received the guests and all were made to feel perfectly at home. It was a great occasion for those in kindred pursuits to become acquainted with one another, when hand grasped hand and hearts beat in unison in one common cause—there were no "speeches" for all were full, and silence on such an occasion would have been the better part of eloquence.

And while the Horticultural Society evidently felt gratified that so many had responded to the invitation, we know that none of the guests but felt it was an occasion to be remembered. But still there is a lingering of sadness when he bid farewell to those veterans whose heads have become white in the pursuit of horticultural knowledge, and whose faces we shall probably never see again this side of the garden of Eden.

In conclusion our thanks are due to Capt. J. H. Reaney, agent for the Keokuk Northern Line Packet Company, for giving us a first-class ticket at half-rates from St. Paul to St. Louis on our way to the Centennial. We appreciate such liberality when directed to the interests of a society like ours, laboring at their own expense for the public benefit, and we cordially recommend our friends and the traveling public when going by way of the river to patronize said line.

J. T. GRIMES,
WYMAN ELLIOT,
Delegates of State Hort. Soc. of Minnesota.

APPENDIX B.

LOCAL AND COUNTY HORTICULTURAL SOCIETIES REPORTING.

GERMAN HORTICULTURAL SOCIETY OF RAMSEY COUNTY.

J. C. Fleischer, St. Paul.....President.
A. Miller, St. Paul.....Secretary.

RICE COUNTY HORTICULTURAL SOCIETY.

R. A. Mott, FaribaultPresident.
A. W. McKinstry, FaribaultSecretary.

NICOLLET COUNTY HORTICULTURAL SOCIETY.

Ernest Meyer, St. Peter.....President.
T. G. Carter, St. Peter.....Secretary and Treasurer.

Nine members.

This Society sends the following report :

Annual meeting to be held on last Saturday in February of each year. Secretary authorized to call summer and autumn meetings at his discretion.

Meeting mainly devoted to discussion of locust question, as this county and vicinity is well stocked with eggs. Paris Green recommended as a preventive (five parts flour to one part Paris Green) to keep them off from all kinds of garden vegetables, that being the experience of some of the members in 1875. Since our meeting the locusts have ruined the entire crop of strawberries and raspberries of S. D. Payne, of Kasota, one of our members, and have taken my grapes, strawberries and raspberries. Our President, Mr. Meyer, has had a fair crop of strawberries and raspberries,

his fruit being protected by a strip of timber from the sand prairie where they were hatched in immense numbers.

Hastily,

T. G. CARTER, Secretary.

M'LEOD COUNTY HORTICULTURAL SOCIETY.

James Chesley, Hutchinson.....President.
Wm. H. Pendergast, Hutchinson.....Secretary.

Organized September 27th, 1876, with ten members.

OLMSTED COUNTY HORTICULTURAL SOCIETY.

A. W. Sias, Rochester.....President.
S. D. Hillman, Rochester.....Secretary.

Fourth annual meeting held at Rochester, Feb. 22d, 1877. The following extracts are taken from the report of this meeting :

Varieties of Apples Recommended.

Wealthy—For a late fall and early winter variety.
Elgin Beauty—For general cultivation.
Rollin's Russet—For general trial as a winter apple.
Rollin's Prolific and Rollin's Pippin—Second and third for general trial.
Duchess of Oldenburg—For late summer and late fall.
Tetofsky—For early summer.
White Astrachan—For trial.
Haas—For general cultivation for late fall.

Seeding down Orchards.

Mr. Hillman called attention to an inquiry of a Byron correspondent in regard to seeding down orchards, etc.

Mr. Sias said the subject was of much importance, as they had recommended varieties which, under certain conditions, were subject to blight. Some claimed that the *Wealthy* and *Haas* blighted badly. But the varieties that blighted the worst were frequently free from the disease where the orchard was seeded down. Clover was the best for this purpose. Some of the finest varieties might thus be raised and kept free from blight. He valued the blighting varieties highly, and meant to set them largely and seed down to clover. He would seed before planting. He would mulch the trees with straw, but not with manure. He regarded blight as a parasitic funga.

Mr. Mason said he had observed marked results from seeding down. A man near Spring Valley had trees in his garden which

were ruined with blight, while the same variety a few rods away, on sod, were perfect trees. Some varieties required cultivation, and were worthless without it.

Mr. Sias said the slow-growing varieties he would not seed down.

Mr. Jordan said the Duchess was not worth planting unless it was cultivated.

After further discussion, a meeting was appointed to be held at the residence of Mr. William Somerville, when the meeting adjourned.

To give some idea of the horticulture of Olmsted county, the following extracts are inserted here:

MINNESOTA FRUIT.

From Rochester Record and Union of Sept. 8th, 1876.

A few days since, Messrs. Sias & Somerville, proprietors of the College Hill Nursery, presented us with a large basket of fine fruit, which is worthy of more than a passing notice, since they have demonstrated that apples of the finest flavor can be grown successfully in Minnesota. They had picked the apples from their orchard, or nursery, selecting a few specimens from nearly every variety in bearing. There were in the lot 15 specimens of standard apples and 10 different kinds of crabs. Besides these were a number of pears of the Flemish Beauty variety, grown to perfection now for the first time. The following is the list of standard fruit: Duchess, Haas, Tetofsky, Melinda, Fameuse, Sops of Wine, Red Astrachan, Ben. Davis, Goodenough, Prolific, Elgin Beauty, and four kinds of seedlings which appear hardy but have not been named. One specimen of Tetofsky measured $9\frac{1}{4}$ inches in circumference.

Mr. Sias informs us that the Elgin Beauty and Prolific are this year bearing largely in the orchard of Mr. Rollins, the old trees having some three barrels of apples on them. He is not prepared to recommend these varieties fully, and he is experimenting largely with Russian varieties. He has two of the latter which have come into bearing this year—Koursk's and Vasilis Largest.

The latter variety resembles the Duchess somewhat. It is a large summer apple, and appears as hardy as the Duchess.

A SUCCESSFUL FRUIT GROWER.

From Rochester Record and Union. of January 26, 1877.

Mr. R. L. Cotterell, of Dover, has one of the best, if not the

best, orchard in this county. It contains some four or five acres, filled with the leading hardy trees, both of crab and standard varieties. He has a number of trees which were purchased of A. W. Sias, of this city, some fourteen years ago, that are now over a foot in diameter. Last year his orchard was so heavily laden with fruit that many trees were seriously injured by the breaking of the limbs. His success in fruit growing may be readily seen from the crop of apples raised last year. He sold over \$200 worth of apples, besides using a large quantity himself and manufacturing several barrels of cider. He also stored away sixteen barrels of fall and winter varieties of apples for his use during the winter. He cannot give an accurate statement of the number of bushels of apples produced, but says that he had no difficulty in disposing of his Duchess at \$4.00 per barrel, when imported apples were selling at \$3.50. The Duchess are the most profitable apple grown, but they do not bear heavily only each alternate year. One tree, which was laden the heaviest with fruit, produced apples 11½ inches in circumference.

The Fameuse or snow apple is an annual and heavy bearer and is a profitable tree. The standard apples are principally the following, given in the order in which they ripen: Red Astrachan, Sops of Wine, Tetofsky, Duchess, Haas, St. Lawrence, Fameuse, Red Romanite, Greening and Russet. There are also two or three kinds of sweet apples raised. He has not suffered much loss from winter-killing, of the kinds named, and says he would plant again in the event of their being killed. The orchard when in full bloom, or later in the season when fairly groaning under its heavy load of delicious fruit, presents a fine appearance. It is almost enough to cause the average Minnesota farmer to break one of the commandments and covet his neighbor's goods. The specimens of apples shown us by Mr. Cotterell, on the occasion of a recent visit, were very large and fine. We could scarcely help wishing that every farmer in the county had as good an orchard and was as comfortably situated.

THE ROCHESTER NURSERY.

From Rochester Record and Union, of July 27, 1877.

We had occasion to call a few minutes one day this week, at the nursery of Mr. M. W. Cook, in East Rochester, and we were very agreeably surprised at the success he has attained in the cultivation of small fruit and nursery stock. He was busy among his strawberry vines, of which he has about eight acres. He finds the growth of small fruit, in connection with his nursery, both a pleasant and profitable occupation. He has picked over two hundred bushels of strawberries this year, averaging from 300 to 700 quarts daily during the picking season—all of which were sold at fifteen cents per quart.

It was impossible to supply the local demand, and he will soon enlarge his berry "patch," as he considers five acres of strawberries more profitable than the best one hundred acres of wheat which can be produced. He picked 150 bushels of berries this year from 1½ acres of the Wilson and Col. Cheney varieties. One picking yielded 480 quarts. They were set two feet apart one way and one foot the other.

Mr. Cook is now picking his raspberries. He considers they will not yield over one-tenth of a full crop this year.

The trees in the nursery are in a very thriving condition. He set out over 60,000 grafts this last spring, of leading varieties. He has 8,000 fine two year old Duchess trees in one place, and 3,000 in another. He has 5,000 Orange crab, 3,000 Haas, 2,000 Tetofsky, and quite a large stock of other leading varieties of trees. Mr. Cook makes it a point to keep the grass and weeds down by means of thorough cultivation.

From Letter of E. B. Jordan.

It may be of some interest to you to know the varieties of fruit trees I have now planted and growing in orchard, which is about as follows: 1. Wealthy, apple, 3,000 trees; 1. Melinda, 2,500; 1. Duchess, 1,500; 2. Haas, 1,000; 1. Tetofsky, 200; 2. Plumb's Cider, 100; 2. Saxton, 50; 3. Ben. Davis, 50; 3. Fameuse, 50; 2. Rollins' Russet, 300; 1. Peach Apple, 50; 3. Walbridge, 50; 3. Pewaukee, 50; 3. Sops of Wine, 75; 2. Jeniton and one kind 4., 25 (I have two varieties of Jenitons, one has borne on my grounds every year since the spring of 1873, the other is not hardy); 3. Utter's Red, 50; 3. Bethel, 50. Also, from two to twenty-five of the following: 3. Autumn Strawberry; 2. Northern Spy; 3. Price's Sweet; 3. Red Bud; three varieties of 1. Haas' Seedlings; 4. Talman Sweet; 3. Blue Pearmain; 2. Rollins' Prolific; 1. Elgin Beauty; 1. Wabasha; 2. Early Pinnock; 2. Viola; 4. Willow Twig; 4. Black Gilliflower; 2. Fulton Beauty; 2. Bailey Sweet; 3. Price's Sweet; 2. Baxter's Pound; 3. Goodenough; 2. Domanista; 2. Blue Pearmain; 3. Winona Chief; 3. King of Minnesota; 4. Bennett's Yellow; 5. Canada Red; 2. Fall Orange; 4. Fall Pippin; 2. Rollins' Winter Sweet; 3. Hart's Early; 3. Sweet Pear; 3. Ramsdale Sweet; 4. Dominie; 5. Smith's Cider; 3. Kirkbridge White; 4. Carolina Red June; 1. Fisher's Maiden's Blush; 2. Fisher's Favorite; 2. Red Bud; 3. Seek-no-further.

I have marked the apples 1, 2, 3 and 4, which may indicate their standing with me for hardiness.

I have some other kinds, such as Perry Russet, Golden Russet, Grimes' Golden Stark Apple, &c., that I have omitted to mention, as they have all been thrown out with (or by) me some time since.

Of crabs I will only mention a few of the leading sorts that I

have the most of under cultivation in orchard: Orange, 200; Beecher's Red, 200; Conical, 130; Gideon's No. 5, 75; General Grant, 25; Minnesota, 50; Early Strawberry, 50; Hesper Blush, 25; Meader's Red Winter, 25; Beecher's Sweet, 30; Aiken's Green Winter, 20; Gideon's Nos. 3 and 6, about 25 each.

My orchard covers a little over fifty acres.

E. B. JORDON.

ROCHESTER, Minn., Jan. 16, 1877.

APPENDIX C.

INCORPORATION OF THE SOCIETY.

ARTICLES OF INCORPORATION OF THE MINNESOTA STATE HORTICULTURAL SOCIETY.

Know all men by these presents, that we, the undersigned, John S. Harris, of La Crescent, Houston county, John H. Stevens, of Hennepin county, Wyman Elliot, Charles Hoag, J. T. Grimes, A. Stewart, R. J. Mendenhall, Peter M. Gideon and Charles H. Clark, all of Hennepin county, D. A. J. Baker, Truman M. Smith, D. A. Robertson, William E. Brimhall, H. J. Brainard, L. M. Ford and Wm. Paist, all of Ramsey county, and Thomas Ramsden of Washington county, O. F. Brand, A. W. McKinstry and Levi Nutting, all of Rice county, and P. A. Jewell, of Wabasha, E. H. S. Dart, of Owatonna, Steele county, all of the State of Minnesota, do hereby associate ourselves together for the purpose of becoming incorporated under the name, and for the purposes hereinafter stated, pursuant to the provisions of title and chapter 34 of the General Statutes of said State of Minnesota, so far as the same may be applicable, and do now adopt the following Articles :

ARTICLE 1. This corporation shall be known as the Minnesota State Horticultural Society.

ARTICLE 2. The object of the society shall be to collect, condense and collate information relative to all varieties of fruits, flowers, and other horticultural productions, and dispense the same among the people.

ARTICLE 3. Any person interested may become a member of the society by paying to the Treasurer or Secretary, the annual fee of one dollar, and signing the constitution and by-laws. The wives of members shall be members of the society without the payment of a membership fee.

ARTICLE 4. The amount of capital stock of this corporation shall be twenty-five thousand dollars (\$25,000,) with privilege to increase it to \$100,000, to be held in shares of twenty-five dollars each.

ARTICLE 5. The officers of this society shall be as follows : President, one Vice President to reside in each Congressional District of this State, Secretary, Treasurer, and an Executive Committee of three or more members, all of whom shall be elected by ballot at the annual meetings of this society, which shall be held on the 3d Tuesday in January.

ARTICLE 6. The principal place of business shall be wherever the majority of the society may hereinafter designate.

BY-LAWS

ADOPTED AT THE ANNUAL MEETING HELD JANUARY 20-28, 1874.

DUTIES OF OFFICERS.

1. It shall be the duty of the President to preside at all meetings of the society, when present, and to deliver an address at the annual meeting of the same. In the absence of the President, one of the Vice Presidents shall preside in his place.

2. The Secretary shall record all the doings of the society, collate and prepare all communications, etc., for the public press, and pay over all money received from members, or otherwise, to the Treasurer, on his receipt; shall receive and answer all communications addressed to the society; establish and maintain correspondence with all local, county, district and State horticultural societies, and secure by exchange their transactions, as far as possible; to aid the President as an executive officer, in the dispatch of business relating to meetings of the society, and notices of horticultural and similar meetings of general interest, and report to the annual meeting of the society an abstract of the matter that has come into his possession, which shall become part of the transactions for the current year, and shall be prepared by him for the public printer.

3. The Treasurer shall collect and hold all funds of the society, and pay out the same only on the order of the Secretary countersigned by the President.

4. An Executive Committee of five shall be chosen annually, who shall, in connection with the President and Secretary, (who shall be members ex-officio) have in charge all matters pertaining to the interests of the society; shall revise all matter coming into the hands of the Secretary, and pass upon the same their approval before its submission to the annual meeting.

5. The Executive Committee may call a meeting of the society at any time and place they may deem advisable for the interests of the society, giving at least thirty days' notice through the public press, and shall in no case incur any expense exceeding fifty dol-

lars except by authority of the vote of the society at its annual meeting, when the specific object and the amount so appropriated shall be designated.

6. The President, at each annual meeting of the society, or as soon thereafter as practicable, shall appoint a General Fruit Committee, consisting of one member from each Senatorial District in the State, and it shall be the duty of each member to report upon the fruit crop in his respective district annually ; also a limited list of fruits best adapted to general cultivation in the district which such member represents.

7. That committees on vegetables and market gardens ; flowers and floriculture ; trees for the forest and forest culture, and entomology, be appointed each year, whose duties it shall be to report on their several topics to this society at the annual meeting.

8. The society may at any regular annual meeting elect as honorary members, any person or persons who may have performed valuable services for the society, or upon whom the society may wish to confer special honor. Such memberships shall be held for five years from date of election, and shall be entitled to all the privileges of the society except voting.

9. Final Article. These By-Laws may be amended by a two-thirds vote of the society at any regular annual meeting.

APPENDIX D.

LAWS OF SPECIAL INTEREST TO HORTICULTURISTS.

FROM CHAPTER 57 OF THE GENERAL LAWS OF MINNESOTA
FOR 1877.

Be it enacted by the Legislature of the State of Minnesota:

SECTION 1. Chapter thirty-eight (38) of the General Laws of one thousand eight hundred and seventy-four (1874), entitled "An act for the preservation of game," is hereby amended to read as follows:

SEC. 1. No person shall kill or pursue with intent to kill any woodcock, saving only during the month of July after the third (3d) day of said month, and during the months of August, September and October; nor any prairie hen or chicken, nor any white-breasted or sharp-tailed grouse or prairie chicken, save only during the month of August after the fourteenth (14th) day of said month, and during the month of September; nor any quail or partridge, save only during the months of September, October and November, nor any ruffed grouse or pheasant, save only during the months of September, October and November; nor any aquatic fowl, save only between the first (1st) day of September and the fifteenth day of May succeeding, in any year.

SEC. 6. No person shall break up or destroy, take away, or in any manner interfere with any nest, or the eggs therein, of any woodcock, snipe, quail, partridge, ruffed grouse or prairie chicken, pheasant, plover, or any species of wild duck, brant or wild goose, not domesticated; nor shall sell or expose for sale the said eggs, nor shall have the same in his possession for any purpose. And every railroad company and every express company, and all employees and agents of the same, shall be deemed persons within the meaning of this section; and any person or persons offending against any provision of this section, shall be punished by a fine of not less than five (5) nor more than fifty dollars (\$50,) and by the forfeiture of all eggs in his or their possession, together with the costs of prosecution.

SEC. 8. No person shall kill, cage or trap any whippoorwill, night hawk, blue bird, finch, thrush, lark, linnet, sparrow, wren, martin, swallow, bobolink, robin, turtle dove, cat bird, or any other harmless bird not elsewhere mentioned in this chapter, excepting blackbirds and wild pigeons. Any person or persons offending against any of the provisions of this section shall be punished by a fine of not less than five [dollars] (\$5) nor more than fifty dollars (\$50,) or by the forfeiture of any gun or guns, cage, trap, net or any other device, and all sporting implements in his or their possession, together with the costs of prosecution, or both, in the discretion of the court.

* * * * *

SEC. 11. No person shall at any time enter into any growing or standing grain not his own, with sporting implements about his person, nor permit his dog or dogs to enter into any such grain without the permission of the owner or occupant thereof; and any person who shall enter upon the premises of another with gun, dogs, or any sporting implements upon his person, without permission of [the] owner or occupant thereof, from and after the first (1st) day of December of any year, to or before the fifteenth (15th) day of August following, with intent to kill, hunt or pursue any animal or game-bird, the killing of which is forbidden by this act, at any time (except woodcock, during the period it is lawful to kill the same,) shall be liable to a fine of ten dollars (\$10.00) for such offense, to be recovered by action before any justice of the peace of the county where the offense was committed, by the owner or occupant of said premises. But nothing in this section contained shall be construed to limit or in any wise to affect the remedy of the owner of any such grain or premises, or of the person injured, at common law for trespass.

For penalties and methods of proceeding, see General Laws for 1877. Page 91.

From Statutes at Large of Minnesota, Bissell, page 1001:

SEC. 114 (45). Willful trespass on garden, orchard, etc., how punished.—Whoever willfully commits any trespass by entering upon the garden, orchard, or other improved land of another without permission of the owner thereof, and with intent to cut, take, carry away, destroy, or injure the trees, grain, grass, hay, fruits or vegetables there growing, or being, shall be punished by a fine not exceeding fifteen dollars nor less than three dollars.

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UNIV. OF MICH.

JUL 26 1909

TRANSACTIONS

OF THE

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MINNESOTA

STATE HORTICULTURAL SOCIETY,

PROCEEDINGS, ESSAYS, AND REPORTS

AT THE SUMMER MEETING,

HELD AT THE

STATE AGRICULTURAL COLLEGE. JUNE 28TH, 1876,

AND AT THE

ANNUAL WINTER MEETING,

HELD AT

Owatonna, January 16th, 17th & 18th, 1877.

Prepared by CHAS. Y. LACY, Secretary.

ST. PAUL:
PIONEER PRESS COMPANY.
1877.

